



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**THE EFFECTS OF ANTI-DEFORESTATION PROGRAMS
ON BRAZIL'S ECOLOGICAL SUSTAINABILITY GOALS
AND THE IMPLICATIONS FOR THE ECONOMIC
OBJECTIVES OF THE STRATEGIC PARTNERSHIP
WITH THE EUROPEAN UNION**

by

Kai Prozeske

June 2014

Thesis Advisor:
Second Reader:

Thomas C. Bruneau
Carolyn C. Halladay

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 2014	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE THE EFFECTS OF ANTI-DEFORESTATION PROGRAMS ON BRAZIL'S ECOLOGICAL SUSTAINABILITY GOALS AND THE IMPLICATIONS FOR THE ECONOMIC OBJECTIVES OF THE STRATEGIC PARTNERSHIP WITH THE EUROPEAN UNION			5. FUNDING NUMBERS	
6. AUTHOR(S) Kai Prozeske				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number ____N/A____.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) This thesis examines the effects of the anti-deforestation programs on Brazil's economic sustainability goals and the related effects on the objectives for sustainable development of the Strategic Partnership between Brazil and the European Union (EU). Specifically, it asks whether the Kyoto Protocol's Clean Development Mechanism (CDM), if implemented in Brazil in order to achieve a reduction in greenhouse gases, runs counter to the development and sustainability objectives of the Strategic Partnership with the EU and may, in fact, slow progress on the reduction of poverty. Can Brazil pursue all of these policy objectives at once? Although Brazil produces most of its energy with renewable resources, massive problems in deforestation still occur. The thesis expands in detail on the climatic objectives and the economic relations within the strategic transatlantic relationship. The climatic goals are presented in depth, and the impact on sustainable economy and development are examined through two specific CDM projects and their effects on the economic development objectives of the Brazilian government. In addition, the results of the CDM project comparison are overlaid on the sustainable development objectives of the Strategic Partnership between the EU and Brazil. Are the achievements of the project objectives in line with the objectives of the Strategic Partnership goals concerning the topic of sustainability in climate change, economy, and development?				
14. SUBJECT TERMS Anti-Deforestation Programs, Brazil, Clean Development Mechanism, CDM Projects, Climatic Change, Economic Development, European Union, Germany, Greenhouse Gas reductions, Kyoto-Protocol, Renewable Resources, Strategic Partnership, Sustainability			15. NUMBER OF PAGES 121	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**THE EFFECTS OF ANTI-DEFORESTATION PROGRAMS ON BRAZIL'S
ECOLOGICAL SUSTAINABILITY GOALS AND THE IMPLICATIONS FOR
THE ECONOMIC OBJECTIVES OF THE STRATEGIC PARTNERSHIP WITH
THE EUROPEAN UNION**

Kai Prozeske
Lieutenant Colonel, German Air Force
Diplom-Wirtschaftsingenieur, Universität der Bundeswehr, 1998

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(WESTERN HEMISPHERE)**

from the

**NAVAL POSTGRADUATE SCHOOL
June 2014**

Author: Kai Prozeske

Approved by: Thomas C. Bruneau, Ph.D.
Thesis Advisor

Carolyn C. Halladay, Ph.D.
Second Reader

Mohammed Hafez, Ph.D.
Chair, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

This thesis examines the effects of the anti-deforestation programs on Brazil's economic sustainability goals and the related effects on the objectives for sustainable development of the Strategic Partnership between Brazil and the European Union (EU). Specifically, it asks whether the Kyoto Protocol's Clean Development Mechanism (CDM), if implemented in Brazil in order to achieve a reduction in greenhouse gases, runs counter to the development and sustainability objectives of the Strategic Partnership with the EU and may, in fact, slow progress on the reduction of poverty. Can Brazil pursue all of these policy objectives at once?

Although Brazil produces most of its energy with renewable resources, massive problems in deforestation still occur. The thesis expands in detail on the climatic objectives and the economic relations within the strategic transatlantic relationship. The climatic goals are presented in depth, and the impact on sustainable economy and development are examined through two specific CDM projects and their effects on the economic development objectives of the Brazilian government.

In addition, the results of the CDM project comparison are overlaid on the sustainable development objectives of the Strategic Partnership between the EU and Brazil. Are the achievements of the project objectives in line with the objectives of the Strategic Partnership goals concerning the topic of sustainability in climate change, economy, and development?

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	MAJOR RESEARCH QUESTION.....	2
B.	IMPORTANCE.....	3
C.	PROBLEMS AND HYPOTHESES	4
D.	LITERATURE REVIEW	6
E.	METHODS AND SOURCES	11
F.	THESIS OVERVIEW	12
II.	THE STRATEGIC PARTNERSHIP BETWEEN THE EUROPEAN UNION AND BRAZIL.....	15
A.	STRATEGIC PARTNERSHIP—CONTENT AND DECLARED GOALS.....	16
B.	CLIMATIC OBJECTIVES IN THE STRATEGIC PARTNERSHIP	20
C.	ECONOMIC OBJECTIVES IN THE STRATEGIC PARTNERSHIP ...	23
D.	HOW TO MONITOR THE PROGRESS OF THE STRATEGIC PARTNERSHIP.....	24
E.	IS SUSTAINABILITY MEASUREABLE?.....	26
F.	WHAT ARE THE ARGUMENTS AGAINST A STRATEGIC PARTNERSHIP?.....	27
G.	WHAT IS THE WAY AHEAD?	28
III.	THE CLEAN DEVELOPMENT MECHANISM IN BRAZIL	31
A.	THE CLEAN DEVELOPMENT MECHANISM.....	33
B.	NATIONAL PLAN ON CLIMATE CHANGE: THE CDM IN BRAZIL	34
C.	CDM PROJECTS IN BRAZIL	36
D.	CRITICISMS OF BRAZILIAN CDMS	41
E.	CONCLUSION	42
F.	THE BRAZILIAN DEFINITION OF SUSTAINABILITY	43
1.	The Designated National Authority	44
2.	Center for Integrated Environmental and Climate Studies	45
IV.	TWO CDM PROJECTS	49
A.	THE PLANTAR PROJECT	49
1.	Appendix III	51
2.	PDD Analysis.....	55
B.	THE UTE-BARREIRO PROJECT	58
1.	Appendix III	60
2.	PPD Analysis	63
C.	CONCLUSION	67
V.	GERMAN-BRAZILIAN COOPERATION	69
A.	POLITICAL RELATIONS	70
B.	ECONOMIC RELATIONS	71

C.	CULTURAL AND EDUCATIONAL COOPERATION	74
D.	RESEARCH COOPERATION	75
E.	COOPERATION FOR SUSTAINABLE DEVELOPMENT	78
VI.	CONCLUSION	83
	BIBLIOGRAPHY	87
	INITIAL DISTRIBUTION LIST	105

LIST OF TABLES

Table 1.	Greenhouse Gas Emissions in Selected Latin American Countries.	5
Table 2.	CDM Projects in Brazil.....	36

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CFSP	Common Foreign and Security Policy
CIMCG	Comissão Interministerial de Mudança Global do Clima
CO ₂ e	CO ₂ -equivalent
DAAD	Deutscher Akademischer Austausch Dienst
DNA	Designated National Authority
DOE	designated operational entity
EB	Executive Board
ECA	European Court of Auditors
ESS	EU Security Strategy
EU	European Union
FBOMS	Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento Sustentável e Meio Ambiente
FSC	Forest Stewardship Council
G20	Group of Twenty Finance Ministers and Central Bank Governors
GHG	greenhouse gas
JI	Joint Implementation
LoA	letter of approval
KfW	Kreditanstalt für Wiederaufbau
LULUCF	Land Use, Land Use Change and Forestry
MERCOSUR	Mercado Común del Sur
NGO	non-governmental organization
PDD	project design documents
PoA	programmatic approach
SD	sustainable development
UN	United Nations
UNFCCC	UN Framework Convention on Climate Change
V&M do Brasil	Vallourec & Mannesmann do Brasil
WCED	World Commission on Environment and Development

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

This master's thesis covers interpretations of social, political, and economic issues and dynamics and, therefore, comments on controversial points that have been of discussion among politicians, journalists, historians, scholars, and others interested in European–Brazilian relations.

I owe particular debt to professors Thomas C. Bruneau, Ph.D., and Carolyn C. Halladay, Ph.D., who gave valuable comments, suggestions, support, and guidance with patience, knowledge, and experience throughout my studies. Academic elites and outstanding characters like them make the Naval Postgraduate School an exceptional and unique place to guarantee excellence through knowledge.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

The world's climate is changing. While scholars and politicians continue to argue about what causes this change and what the world might expect from it, climate change now forms a major consideration of domestic and international policy. The overarching project connecting the Brazilian efforts is the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). It is one of the chief instruments for tackling climate change, most demonstrably by obliging industrialized countries to reduce their emissions of certain greenhouse gases, which are responsible for global warming.

In Brazil, which signed the Kyoto Protocol in 1998 and ratified it in 2002, several schemes are being implemented to curb deforestation, such as the Program for Protection of Amazon Areas, also called the Sustainable Amazon Program. As the Brazilian government stated in its National Program on Climate Change, the topic of climate change is a strategic issue for both the present and the future of national development.¹ For the Brazilian administration, climate change is not just a question of productive and technological choices. It is also a matter of the preservation and, whenever possible, the increase in the competitiveness of the economy and of Brazilian products in a globalized world.

The European Union (EU) is also very concerned about the effects of climate change in Brazil. According to the EU Country Strategy Paper, climate change is likely to affect Brazil's natural ecosystems: "There are indications that global climate change and deforestation may lead to major shifts in the hydrological system of the Amazon, with potentially catastrophic consequences for the rainforest and the whole region."² The Joint Action Plan between Brazil and the EU calls for the signatories to make concerted efforts to support strong, sustainable, balanced and inclusive growth in the context of the Group

¹Government of Brazil, Interministerial Committee on Climate Change, Decree No. 6263 of November 21, 2007, National Plan on Climate Change (Brasilia, 2008), 7.

²Europäische Kommission [European Commission], Brasilien: Länderstrategiepapier 2007–2013 [Brazil: Country Strategy Paper 2007–2013] (Brussels: European Commission, 2007), 12.

of Twenty Finance Ministers and Central Bank Governors (G20) Framework for Growth, to ensure the effective reform of financial markets, efficient commodity markets, and appropriate reforms of the international monetary system. Both partners consider economic stability a top priority in their regional objectives.

A. MAJOR RESEARCH QUESTION

Brazil is emerging as a global player with an exceptional economic performance. This development entails increasing social and environmental responsibilities for the Brazilian government. However, Brazil now may be caught between conflicting—possibly mutually exclusive—treaty obligations. To comply with the climate change objectives of the Kyoto Protocol, Brazil has taken steps to limit deforestation and thus regulates the economic exploitation of natural resources. On the other hand, Brazil's Strategic Partnership with the European Union calls for sustainable economic development, which seems to militate against such regulation.

This thesis examines the effects of the anti-deforestation programs on Brazil's economic sustainability goals and the related effects on the objectives for sustainable development (SD) of the Strategic Partnership between Brazil and the EU. Specifically, it asks whether the Kyoto Protocol's Clean Development Mechanism (CDM), if implemented in Brazil in order to achieve a reduction in greenhouse gases, runs counter to the development and sustainability objectives of the Strategic Partnership with the EU and might, in fact, slow progress on the reduction of poverty. Can Brazil pursue all of these policy objectives at once?

The thesis expands in detail on the climatic objectives and the economic relations within the strategic transatlantic relationship between Brazil and the EU. The climatic goals are presented in depth, as are the effects on sustainable economy and development. I examine two specific projects of the CDM and analyze their effects on the economic development objectives of the Brazilian government. The selected projects are two reforestation programs that have been in the CDM market for more than six years. These two projects recommend themselves because the availability of general project data

concerning the costs, the environmental effects, and the climate implications is very good.

In addition, the results of the CDM project comparison are examined against the sustainable development objectives of the Strategic Partnership between the EU and Brazil. Are the achievements of the project objectives in line with the objectives of the Strategic Partnership goals concerning the topic of sustainability in climate change, economy, and development?

B. IMPORTANCE

Brazil is facing a twofold problem. On the one hand, Brazil is causing enormous greenhouse gas emissions, and the reduction of these greenhouse gases emissions is high on the national climate agenda.³ On the other hand, Brazil as an emerging world power seeks to provide its population a reasonable standard of living. The successful combination of these objectives—reduction of greenhouse gas emissions and reduction of poverty—presents Brazil with enormous challenges. The issue becomes even more complicated when the goals of the Strategic Partnership are taken into account. These obligations plus Brazil's ambitions to stabilize and enhance its position on the global stage suggest that the sustainable development will have higher priority than the commitments to climate change projects.

There are a number of reasons why Europe should be interested in establishing an even greater cooperation with Brazil and to position itself as a political partner for future dialogues. First, Europe should approach the South American country as a partner for the design of regional and global processes. For instance, the EU and Brazil could pursue opportunities for a closer coordination within the Peace Building Commission of the United Nations (UN). But it is also in the enlightened self-interest of Europe to engage more than in the past with an emerging economic power with increasing technological and scientific skills. Various studies predict massive shifts in the global economic and political power in the coming decades. The Asian “anchor” countries, as well as Russia,

³Susanne Gratius and Debora González, “The EU and Brazil: Shared Goals, Different Strategies,” in *Hot Issues, Cold Shoulders, Lukewarm Partners: EU Strategic Partnerships and Climate Change*, ed. Giovanni Grevi and Thomas Renard (Madrid: FRIDE, 2012), 13.

Brazil, and probably South Africa and Turkey are becoming increasingly dynamic, greatly increasing their share of global production of goods and services in world trade and investment flows. Moreover, global demographic trends presage a relative loss of importance of Europe as a whole. A strong decline in population in Europe will make it increasingly difficult to maintain a strong position in the global dialogue with countries such as Brazil. Of particular importance to Europe's partnership with Brazil: Brazil is a major supplier of raw materials of strategic importance, and it also has a high level of technological expertise.

Brazil has positioned itself as another pole of power in the international economic and political system while continuing to guard carefully its sovereignty, as in the case of self-imposed carbon monoxide (CO)-emission reduction targets. The Brazilian government has recognized that economic development is possible in a more environmentally friendly way than in Europe since the industrial revolution. But this objective can only be achieved through closer cooperation with the EU.

C. PROBLEMS AND HYPOTHESES

Gases that trap heat in the atmosphere are known as greenhouse gases. Although these gases are released in the course of natural activity on the planet, human activity is responsible for the sharp and dire increase of greenhouse gases in the atmosphere in recent decades.⁴ Brazil is, with Mexico, Argentina, and Venezuela, one of the biggest producers of greenhouse gas emissions in Latin America, although the government is pursuing an active role in climate politics.⁵

⁴Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) [Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety], Internationale Klimapolitik [International Climate Policy], accessed November 21, 2013, www.bmu.de/P201/.

⁵Augusto de la Torre, Pablo Fajnzylber, and John Nash, "Low Carbon, High Growth: Latin American Responses to Climate Change," World Bank Latin American and Caribbean Studies (Washington, DC: The World Bank, 2009), 26–27.

Table 1 shows the data of total greenhouse gas emissions for selected Latin American countries in 2010.⁶

Country	Greenhouse Gas Emissions [in million tons CO₂equivalent]
Brazil	2,136.21
Mexico	706.46
Argentina	450.46
Venezuela	387.11

Table 1. Greenhouse Gas Emissions in Selected Latin American Countries.

Brazil has been trying to mitigate climate change effectively while guaranteeing of the welfare of its citizens. With this dual aim, the country has been searching for solutions in conjunction with numerous actions that are both directly and indirectly favorable to the climate change. Brazil is committed to do more, taking full advantage of its national capacity under the auspices of a global effort to combat climate change. An adequate flow of financing, technology transfer, and capacity building resulting from international cooperation will be important elements to help meet the objectives stipulated in the National Plan on Climate Change.⁷

From the different country reports of the United Nations, the World Bank, and the Organization for Economic Co-operation and Development (OECD), it becomes clear that in many countries, economic growth is closely linked to an enormous increase in emissions. Brazil's efforts are based on the commitment to reduce social inequality and to increase income by seeking an economic dynamic with a low emissions trajectory, not

⁶“WRI’s Climate Analysis Indicators Tool (CAIT 2.0),” World Resource Institute, accessed April 20, 2014, [http://cait2.wri.org/wri/Country%20GHG%20Emissions?indicator\[\]=Total%20GHG%20Emissions%20Excluding%20LUCF&indicator\[\]=Total%20GHG%20Emissions%20Including%20LUCF&year\[\]=2010&chartType=geo](http://cait2.wri.org/wri/Country%20GHG%20Emissions?indicator[]=Total%20GHG%20Emissions%20Excluding%20LUCF&indicator[]=Total%20GHG%20Emissions%20Including%20LUCF&year[]=2010&chartType=geo).

⁷Government of Brasil, Interministerial Committee on Climate Change, Decree No. 6263 of 21 November 2007, National Plan on Climate Change (Brasilia, 2008).

repeating the pattern of the countries that have already industrialized. For the development of the country to take place on a sustainable basis, government actions for the productive sector aim at a more efficient use of natural, scientific, technological, and human resources. In stimulating better performance, Brazil seeks to reduce the carbon content of Brazilian gross domestic product (GDP), improve the competitiveness of Brazilian products in the international market, increase income and generate economic surplus that can lead to better levels of social welfare.

In relation to the EU, central topics of the Strategic Partnership with Brazil include effective multilateralism, cooperation on human rights, climate change, sustainable energy, the fight against poverty, MERCOSUR's⁸ integration process and Latin America's stability and prosperity. Trade is another important subject of dialogue because Brazil is the most important market for the EU in Latin America.⁹ Specifically, the EU seeks to ensure environmental sustainability, while at the same time supporting Brazil's efforts to comply with its commitments under multilateral environmental agreements, in particular the Convention on Biological Diversity, the Framework Convention on Climate Change, and the Kyoto Protocol.

Greenhouse gas reduction measures seem to have the potential to interfere with or even subvert the objectives of economic development and reduction of poverty. The related problem for the Brazilian government will be to identify suitable measures supporting economic and social development as well as stopping or at least reducing the increase of greenhouse gas emissions.

D. LITERATURE REVIEW

For the last ten years, the challenges of how to respond to climate change and ensure sustainable development have been high on the political agenda among the world's leading nations. The Clean Development Mechanism is part of the global carbon market developing rapidly as part of the Kyoto response to global warming. One of the

⁸MERCOSUR is an economic and political agreement among Argentina, Brazil, Paraguay, Uruguay, and Venezuela; "Quienes Somos," MERCOSUR, accessed April 21, 2014, http://www.mercosur.int/t_generic.jsp?contentid=3862&site=1&channel=secretaria&seccion=3.

⁹Europäische Kommission, *Brasilien: Länderstrategiepapier 2007–2013*.

aims of the CDM is to achieve sustainable development in developing countries, but uncertainty prevails as to whether the CDM is doing what it promises to do. Nearly 200 studies on the CDM have been carried out since its birth in 1997, including peer-reviewed articles and reports from secondary sources. Overwhelmingly, these studies show that left to market forces, the CDM does not significantly contribute to sustainable development. In addition, the CDM projects do not have great influence on the goals of the EU's Strategic Partnership agreements.¹⁰

Research findings on how the CDM contributes to sustainable development have shifted in the last few years. For one thing, the studies have primarily been performed on a project-by-project basis. In a paper for the conference "Climate or Development?" held at the Hamburg Institute of International Economics in Germany, on October 28–29, 2005, Christoph Sutter and Juan Carlos Parreño analyzed the portfolio of registered CDM projects approved by August 30, 2005.¹¹ Since 2005, the literature has focused on the contribution of the CDM to sustainable development at aggregated levels, i.e., for all CDM projects in the portfolio rather than at the project level.¹² A common perspective of the studies is the argument for the need for an international standard for sustainability assessment to counter weaknesses in the existing institutional structure. According to the World Bank's program "Partnership for Market Readiness," the first Brazilian CDM project was approved in 2004; CDM project activities in Brazil, up to June 30, 2011, show 499 projects approved nationwide. Brazil thus ranks fourth in the world for CDM projects, right after India, Indonesia, and China.¹³

¹⁰Ever since the introduction of the Common Foreign and Security Policy (CFSP) in the framework of the Maastricht Treaty in 1993, the EU is keen to speak in foreign policy with one voice. This goal is pursued with the help of so-called strategic partnerships with third countries and international organizations. Concluded strategic partnerships aim to strengthen cooperation in political and economic issues. The EU uses strategic partnerships to bundle and coordinate individual projects and contracts with structurally important third countries or international organizations.

¹¹Christoph Sutter and Juan Carlos Parreño, "Does the Current Clean Development Mechanism Deliver Its Sustainable Development Claim? Climate or Development?" (Hamburg: Hamburg Institute of International Economics, 2005), 81.

¹²Sutter and Parreño, "Does the Current Clean Development Mechanism (CDM) Deliver Its Sustainable Development Claim? An Analysis of Officially Registered CDM Projects," *Climatic Change* 84 (2007): 75–90.

¹³The World Bank, Projects and Operations, CDM Project Count, accessed November 16, 2013, <http://www.worldbank.org/projects/search?lang=en&searchTerm=CDM>.

The official documents of Brazil's government under the presidencies of Luiz Inácio Lula da Silva and Dilma Rousseff are the major sources concerning the country's objectives of climate change programs.¹⁴ Brazil was involved in the CDM negotiations from the beginning, and its proposal for the establishment of a Clean Development Fund was essential for CDM development. Brazil is proud of this crucial contribution and sees itself as a pioneer in the evolution of suitable projects and project methods.¹⁵ Furthermore, the CDM-related documents of the Interministerial Commission on Climate Change (CIMGC) offer valuable insight into the Brazilian CDM processes. Especially, the CIMGC documents provide information about CDM project activities, detail the specific regulations governing the submission of CDM project activities in Brazil, facilitate an understanding of the process, and promote the development of CDM projects in the country.¹⁶

The European Commission set a five-year deadline to accomplish specific objectives in the agreements with Brazil.¹⁷ Additional information is directly related to the results of the Rio+20 United Nations Conference on sustainable development.¹⁸ The relevant documents of the UN contribute to the consultation and the support of the interpretation of the CDM project outcomes.¹⁹ All primary sources of the Brazilian government and the UN reviewed here have a positive bias in regard to the CDM outcomes. Concerning the official documents of the EU, the basic principle of the Strategic Partnership implies a positive attitude. It seems clear that such negotiations and agreements should only be conducted when all parties involved anticipate positive

¹⁴Government of Brazil, Interministerial Committee on Climate Change, Decree No. 6263 of November 21, 2007, National Plan on Climate Change (Brasília, 2008), 5–7.

¹⁵Lars Friberg, "Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged," *The Journal of Environment Development* 18, no. 4 (2009): 395–424.

¹⁶Isaura Frondizi, *Guide to the Clean Development Mechanism*, trans. Knight Campbell (Rio de Janeiro: Imperial Novo Milênio, 2009), 12.

¹⁷Europäische Kommission, *Brasilien: Länderstrategiepapier 2007–2013*, 3.

¹⁸United Nations General Assembly, Resolution 64/236--A/RES/64/236 Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Outcomes of the World Summit on Sustainable Development, New York: 2010.

¹⁹United Nations, *Economics of Climate Change in Latin America and the Caribbean Summary 2010*, Santiago de Chile: 2010.

outcomes for their area of responsibility. A monitoring system to examine the outcomes is not part of the official documents.

The CDM projects Plantar from Plantar S.A. and UTE-Barreiro from Vallourec & Mannesmann do Brasil (V&M do Brasil) have the required documentation for the authorization process carried out by the Brazilian government.²⁰ Unsurprisingly, the official paperwork of the projects' firms has a very positive attitude concerning the beneficial outcomes. This slant portrays the desired outcome from the companies' point of view, because Plantar S.A. and V&M do Brasil want to support their projects and are looking for official subsidies and a return on investment. Fortunately, the official documentation offers a deeper look into the monitoring and validation process, so an almost objective comparison between the two projects appears possible.²¹

From the review of the literature on how the CDM contributes to sustainable development, a consensus emerges that the CDM is beginning to do what a true market is meant to do. This development involves trade-offs between the two goals of the mechanism in favor of producing low-cost emission reductions at the expense of achieving SD benefits.²² One critique holds that "the CDM does not work," in that it does not drive SD and does not fund renewable energy projects or carbon forestry projects

²⁰Federal Republic of Brazil, Interministerial Commission on Global Climate Change, Plantar Letter of Approval (2007), accessed November 17, 2013, http://cdm.unfccc.int/filestorage/7/Z/9/7Z9KY7XL0W444I7UFGJM8WLI030D1B/LOA%20Brazil.pdf?t=cVZ8bXdtZXNnfDCjamdLwEEi9GwXA_rd4S7e; Bureau Veritas Certification, Report No: BRAZIL-val/BR1119369/2012 rev. 04.0, Validation Report V&M do Brasil S.A., Neuilly Sur Seine Cdx, France: 2011, 9–10.

²¹Plantar Validation Report, "Validation Report: Mitigation of Methane Emissions in the Charcoal Productions of Plantar in Brazil. Report No. 2007–0196," accessed November 25, 2013, <http://cdm.unfccc.int/UserManagement/FileStorage/EZG7AT3C7CHD70USTN3L11WK05JNQC>; V&M validation report, "Validation Report: UTE Barreiro S.A. Renewable Electricity Generation Project – Brazil, Report No. 2005–0025," accessed November 25, 2013, http://cdm.unfccc.int/filestorage/X/C/P/XCPVJLVEQ80TCV21RH9FD6E6844K0U/Validation%20Report.pdf?t=bEJ8bXd1ajhrfDBrrhtLRBP28vcq_PyKFmYq.

²²K. Brown et al., "How Do CDM Projects Contribute to Sustainable Development?" Tyndall Centre Technical Report No. 16, Tyndall Centre for Climate Change Research: 2004, 1–53; A. Cosbey et al., "Realizing the Development Dividend: Making the CDM Work for Developing Countries." Phase 1 Report – Prepublication Version, International Institute for Sustainable Development (IISD): 2005, 1–72; J. Ellis et al., "Taking Stock of Progress under the Clean Development Mechanism (CDM)," Organization for Economic Co-operation and Development (OECD), Paris: 2004, 1–51.

with high development co-benefits.²³ However, the problem can be turned around. The CDM works perfectly to the extent that it produces the lowest-cost emission reductions. Left out of the market, however, are the SD benefits. While rhetorically mandated in the Kyoto Protocol, they are not monetized and therefore play a limited role in directing investments.

Another part of the literature addresses the Strategic Partnership between the EU and Brazil in general terms²⁴ as well as the related objectives.²⁵ Describing the general tenor of these sources, scholars argue that the relationship of Brazil and the EU has not reached an equal level yet although Brazil shares many priorities with the EU and so can play a constructive role in bridging political differences, it follows a different power strategy.²⁶ These varying positions suggest that strategic partnerships must be fine-tuned to fit the distinctive priorities and negotiating postures of different partners. Concerning the outcome of CDM projects, the focus of the scholarly analyses is on the interpretation of the effects on climate change potential and the achievement of ecological sustainability.²⁷ Furthermore, several sources address the direct climate and economic effects within the Amazon basin in Brazil.²⁸ From them, it appears that the CDM projects do not have positive effects. Most notably, the regional and local effects in regard to economic inequalities, the fight against poverty, and air pollution tend to be negative.

²³Ben Pearson, "The Clean Development Mechanism and Sustainable development," *Tiempo Climate Newswatch* 2005, accessed November 17, 2013, <http://www.tiempocyberclimate.org/newswatch/comment050301.htm>.

²⁴Thomas Renard, "The EU Strategic Partnerships Review: Ten Guiding Principles," ESPO, Policy Brief 2, FRIDE, Egmont: 2012; Susanne Grätius and Detlef Nolte, "Die EU und Lateinamerika: Partnerschaft auf Augenhöhe?" [The EU and Latin America: Partnership at Eye Level?] German Institute of Global and Area Studies, GIGA Focus No. 2, Hamburg: 2013.

²⁵Giovanni Grevi, "The Rise of Strategic Partnerships: Between Interdependence and Power Politics," ed. Giovanni Grevi and Álvaro de Vasconcelos, Chaillot Paper no. 109, European Union Institute for Security Studies, Paris: 2008; Michael Emerson and Renato Flores, eds., "Enhancing the Brazil-EU Strategic Partnership – from the Bilateral to the Regional and Global," CEPS, Brussels: 2010.

²⁶Grätius and González, "The EU and Brazil: Shared Goals, Different Strategies," 11–22.

²⁷Sutter and Parreño, "Does the Current Clean Development Mechanism (CDM) Deliver Its Sustainable Development Claim? An Analysis of Officially Registered CDM projects," *Climatic Change* 84 (2007): 75–90.

²⁸"Inside a Champion - An Analysis of the Brazilian Development Model," Publication Series on Democracy, ed. Dawid Danilo Bartelt (Berlin: Heinrich Böll Foundation, 2012).

The potential effects of the CDM projects concerning the economic sustainability objectives of the Strategic Partnership between the EU and Brazil have not been examined so far. Many scholars agree that the two parties do not have a resilient common agenda on the issue of sustainable development at the global level.²⁹ In addition, the Bertelsmann Foundation, the International Institute for Sustainable Development, and the Willis Harman House are offering interesting and valuable data concerning the sustainability issues of Brazil's government performance.³⁰

E. METHODS AND SOURCES

The main approach of this thesis consists of a general evaluation of primary and secondary sources that deal with both the issue of climate change as well as the Strategic Partnership between the EU and Brazil. The initial literature research for the thesis was conducted in September and October 2013 using four sources. First, the American-based Web of Science gave 58 hits on peer-reviewed articles on the CDM in Brazil. Second, the Worldcat database showed 37 hits on the Strategic Partnership between the EU and Brazil. In this second part, the related journals had a bias towards European publications. Third, several journals and articles were found in the library databases of the Federal Armed Forces of Germany, the German Bundestag, and the European Union. Finally, additional sources on the subject of CDM were found through the Internet using Google/Google scholar.

Concerning the European contribution, different institutions of the EU are involved in the Strategic Partnerships with external partners. In the case of the strategic agreements between the EU and Brazil, official papers from the European Commission and the European Parliament are important in this research. These documents address the agreements on the different objectives that are supposed to be achieved in this Strategic

²⁹Gratius and Nolte, "Die EU und Lateinamerika: Partnerschaft auf Augenhöhe?"

³⁰Renato Flores et al. "Sustainable Governance in the BRICS - Country Report Brazil," Sustainable Governance Indicators, Bertelsmann Stiftung, Bielefeld: 2011; "Brazil Case Study - Analysis of National Strategies for Sustainable Development," International Institute for Sustainable Development (IISD), Ottawa: 2004.

Partnership.³¹ To evaluate the possible influence of environmental projects on economic objectives, two projects are considered in more detail. These projects were selected because of the availability of the accessible data sets. A comparison of the two projects is provided to demonstrate the impact expected on the economic objectives.

In the literature research, the primary sources were initially considered to reach a formal assessment of the topic. These sources are limited to documents of the Brazilian government, the EU, and the government of Germany. The secondary sources include on the one hand extant titles mainly on the subject of climate change, and on the other hand, titles on the subject of the Strategic Partnership. The interpretation of the sources on the interaction of climate change and economic development in the example of Brazil and the EU represents the main part of this work.

F. THESIS OVERVIEW

The next chapter of the thesis after this introduction presents a general overview of the relationship of Brazil and the EU and the content of this Strategic Partnership and its declared goals.

Chapter III of the thesis expands on the climatic objectives within the Strategic Partnership agreements. Therefore, the climatic goals appear in detail and the interactions with the fields of economy and development are examined. The objectives and effects of CO-emission trade regulations are not part of this thesis. Furthermore, Chapter III addresses the definition of sustainability, which is used in the Strategic Partnership. This part sheds light on which key points the definition entails. Furthermore, the thesis explains whether there are any indicators or factors with which the sustainability objectives are to be achieved.

³¹Commission of the European Communities “Communication from the Commission to the European Parliament and the Council—Towards an EU-Brazil Strategic Partnership,” COM (2007) 281 final, Brussels: 2007.

Chapter IV starts with a brief explanation of the CDM. The explanation is brief because it is not the main topic of the thesis. The “Plantar-Project” and the “UTE-Barreiro-Project” are presented. All available data concerning the costs, the environmental effects, and the climate implications will be presented.

The comparison of the effects of the CDM projects on the sustainability goals of the Strategic Partnership, as captured in Chapter V, forms the crux of this thesis. Of particular concern is whether the achievements of the project objectives are in line with the goals of the Strategic Partnership goals concerning climate change, the economy, and development. The German perspective on the Strategic Partnership and the future bilateral relationship with Brazil completes this part of the analysis.

The thesis will close with an investigation of the definition of sustainability, which varies among countries and organizations. This divergence often spells problems when agreements are to be reached. Are there different interacting definitions—for example, objectives in the UN and the EU—that hamper agreement? And how can these problems be solved?

THIS PAGE INTENTIONALLY LEFT BLANK

II. THE STRATEGIC PARTNERSHIP BETWEEN THE EUROPEAN UNION AND BRAZIL

The EU's Common Foreign and Security Policy³² (CFSP) was born in the reassuring post-Cold-War unipolar world, but it had to grow up in the much tougher strategic environment of the early twenty-first century, marked by asymmetric threats, power shifts, and economic turmoil. The EU was not prepared to cope with successive crises and, like other major actors, it has been struggling to adapt to a more competitive, diverse, and polycentric international context.³³ To this end, the EU recognized that globalization not only offers new opportunities, but also reflects more complex and interconnected global threats. In the process of adapting new strategies for its foreign policy, the EU has implemented important adjustments, culminating in new levels of engagement and new scopes for cooperation with other major actors such as Brazil.

The relations between the EU and Brazil date back to the Treaties of Rome in the 1960s.³⁴ In 1961, Brazil and the European Atomic Energy Community (Euratom)³⁵ concluded a cooperation agreement on the peaceful use of nuclear energy. Brazil advanced the idea of a new economic and trade cooperation agreement at the end of 1977, and exploratory talks began in 1979. They were concluded in July 1979, after the

³²The Common Foreign and Security Policy is the organized, agreed foreign policy of the European Union for mainly security and defense diplomacy and actions. CFSP deals only with a specific part of the EU's external relations, which domains include mainly Trade and Commercial Policy and other areas such as funding to third countries, etc. Decisions require unanimity among member states in the Council of the European Union, but once agreed, certain aspects can be further decided by qualified majority voting. Foreign policy is chaired and represented by the EU's High Representative.

³³Giovanni Grevi, "The EU and Brazil: Partnering in an Uncertain World?" CEPS working document No. 382, Centre for European Policy Studies, Brussels, May 2013, 4.

³⁴Jasper Eitze, "Die EU und Brasilien – Partner für Klimaschutz und Energiesicherheit," [The EU and Brazil - Partners for Climate Protection and Energy Security] Konrad-Adenauer-Stiftung [Konrad-Adenauer-Foundation], 2010, 1.

³⁵The European Atomic Energy Community (EAEC or Euratom) is an international organization founded in 1958 with the purpose of creating a specialist market for nuclear power in Europe, developing nuclear energy and distributing it to its member states while selling the surplus to non-member states. It is legally distinct from the European Union, but has the same membership, and is governed by the EU's institutions.

Brazilian government reaffirmed its interest in this agreement.³⁶ After these new negotiations on trade cooperation, a first framework agreement on cooperation was signed in September 1980, though it was limited to cooperation in trade. With the end of military rule in 1985 and the consolidation of democracy in Brazil, bilateral relations took a leap forward. In June 1992, both parties signed an expanded framework agreement on cooperation. The major elements of this agreement included cooperation in the fields of trade, investment and finance, science and technology, transport, environment, social development, counter-narcotics, and regional integration.

Ever since the introduction of the CFSP within the framework of the Treaty of Maastricht in 1993, the EU has striven to speak with one voice in foreign policy issues. Bilateral cooperation with third countries and international organizations advance this goal. More specifically, “The Union’s action on the international scene shall be guided by the principles which have inspired its own creation, development and enlargement, and which it seeks to advance in the wider world.”³⁷ Moreover, for further bilateral negotiations with Brazil, this approach creates a specified framework for the member states of the EU. In addition, when it comes to an intensification of the relations, the Brazilian government can be sure that all of the EU member states will keep to these defaults.

A. STRATEGIC PARTNERSHIP—CONTENT AND DECLARED GOALS

The term “Strategic Partnership” emerged in the implementation of the EU Security Strategy³⁸ (ESS), which was adopted by the European Council in December

³⁶“The European Community and Brazil,” Europe Information—External Relations, Commission of the European Communities, X-218-80-EN, Brussels: 1980, 1.

³⁷Consolidated version of the Treaty of the European Union, Article 21, Official Journal of the European Union C 115/13, May 9, 2008.

³⁸The European Security Strategy is the document in which the European Union clarifies its security strategy which is aimed at achieving a secure Europe in a better world, identifying the threats facing the Union, defining its strategic objectives and setting out the political implications for Europe. The European security strategy was for the first time drawn up in 2003 under the authority of the EU’s High Representative for the Common Foreign and Security Policy, Javier Solana, and adopted by the Brussels European Council of 12 and 13 December in 2003.

2003.³⁹ The only timely exception is the Strategic Partnership with the United States, which was already established in 1995.

The ESS provides the conceptual framework for the Common Foreign and Security Policy. It is a brief but comprehensive document that analyzes and defines for the first time the EU's security environment, identifying key security challenges and subsequent political implications for the EU. In this framework, the ESS singles out five key threats: terrorism, proliferation of weapons of mass destruction, regional conflicts, state failure, and organized crime. Furthermore, the ESS calls for preventive engagement to avoid new conflicts/crises.⁴⁰ The commitments made by the Strategic Partnerships are aimed at strengthening cooperation in political and economic issues. Thus, the EU uses the Strategic Partnerships to bundle and coordinate individual projects and contracts with important third countries or international organizations.

Strategic Partnerships are implemented to fulfill three important roles. First, Strategic Partnerships enable the negotiating parties to position themselves essentially as equals. Second, structured bilateral relations provide, especially in the economic field, the opportunity for both parties to achieve benefits in international markets through mutual support.⁴¹ Unfortunately, the Strategic Partnership as such has not yet matched expectations on this account. For instance, trade agreements are held hostage to inter-regional politics, and protectionism is on the rise.⁴² A traditionally asymmetric economic relationship has evolved into a more balanced one with sustained two-way investment

³⁹Margot Heimbach und Farina Busch, "Strategische Partnerschaften der Europäischen Union," [Strategic Partnerships of the European Union] Deutscher Bundestag [German Bundestag], Wissenschaftliche Dienste [Science Services], Fachbereich WD 11 – Europa [Division WD 11 – Europe], Nr. 11/09 (July 29, 2009), 1.

⁴⁰"European Security Strategy," European Union External Action Service, Brussels, accessed April 20, 2014, <http://www.eeas.europa.eu/csdp/about-csdp/european-security-strategy/>.

⁴¹ Grevi, "The EU and Brazil: Partnering in an Uncertain World?" 9.

⁴²Jan D. Walter and Fernando Caulyt, "Brasilien dringt auf EU-Freihandelsabkommen," [Brazil Pushes for an EU Free Trade Agreement] Deutsche Welle [German Wave], accessed February 14, 2014, <http://dw.de/p/19UHy>.

flows. Brazil became the fourth-largest investor in the EU, behind the United States, Switzerland, and Canada.⁴³

The third element describes the key function of the Strategic Partnership to implement consultations to address important issues on the international agenda, for instance, through a concerted action on the international scene. Although the overall progress has been marginal, some areas for renewed engagement have already been detected, for example, the mutual efforts in projects against climate change.⁴⁴

The EES directed the Union to become more active, capable, and coherent in addressing non-traditional threats and stressed the comprehensive and multilateral character of Europe's international engagement.⁴⁵ However, it did not accommodate the geo-strategic shifts that would soon challenge the economic and normative foundations of the international system itself. In pursuing its soft-power strategy, the EU sought to promote regional cooperation and integration in other parts of the world, for example, in establishing partnerships with the MERCOSUR and the African Union.

The 2008 report on the implementation of the ESS, a rather formal document, deserves a mention here as evidence of the slowly evolving strategic outlook of the Union, and of creeping questions about the stability of the post-cold war order.⁴⁶ The notion of a changing world is central to the very title of the report, which starts by acknowledging that globalization has brought with it opportunities, but also made threats more complex and interconnected, while "accelerating power shifts and ... exposing

⁴³“Top ten countries as extra EU-27 partners for FDI positions, EU-27, end 2009–2011,” Eurostat, European Commission, accessed February 18, 2014, [http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Top_ten_countries_as_extra_EU-27_partners_for_FDI_positions,_EU-27,_end_2009-2011_\(EUR_1_000_million\).png&filetimestamp=20130722084750](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Top_ten_countries_as_extra_EU-27_partners_for_FDI_positions,_EU-27,_end_2009-2011_(EUR_1_000_million).png&filetimestamp=20130722084750).

⁴⁴Christian Egenhofer and Monica Alessi, “EU Policy on Climate Change Mitigation since Copenhagen and the Economic Crisis,” CEPS Working Document No. 380, CEPS, Brussels, March 2013; Eduardo Viola, “Brazilian Climate Policy since 2005: Continuity, Change and Prospective,” CEPS Working Document No. 373, CEPS, Brussels, February 2013.

⁴⁵ Grevi, “The EU and Brazil: Partnering in an Uncertain World?” 2.

⁴⁶“Report on the Implementation of the European Security Strategy, Providing Security in a Changing World,” European Union External Action Service, Brussels, December 11, 2008.

differences in values.”⁴⁷ The threat assessment was complemented by a new focus on climate and energy security in a world of scarce resources, as well as on cyber security. The notion of “partnerships for effective multilateralism” was introduced, referring to cooperation with both multilateral organizations and other important powers, including chiefly the United States but also Brazil, Canada, China, India, Japan, Russia, and South Africa. The EU also has concluded a Strategic Partnership with NATO. Regarding the Strategic Partnership between the EU and Brazil in more detail, the mutual relation began in 1995 and is marked with a unique kind of dynamic. In December 1995, the Framework Agreement signed between the EU and MERCOSUR consolidated bilateral cooperation with Brazil.

Despite the initial enthusiasm for cooperation on both sides, the bilateral relations have long been characterized as only of secondary importance and with occasionally conflicting interests. The mutual relationship has strengthened over the years. It must be noted that Brazil came into the European strategic view only in the course of its impressive economic boom in recent years and the associated increasing political presence of the country on the international stage.⁴⁸ Although the rise of the country and its successful integration within the circle of regional leading powers were hard to ignore, the EU offered Brazil the status of a Strategic Partnership only in 2007, as the last of the BRIC countries.⁴⁹ This arrangement is politically important for both the EU, whose international performance is often questioned, and for Brazil, which has long pursued its integration in the union of the world’s key players.

⁴⁷ Grevi, “The EU and Brazil: Partnering in an Uncertain World?” 3.

⁴⁸ Konrad-Adenauer-Stiftung, “Die EU und Brasilien – Partner für Klimaschutz und Energiesicherheit,” [The EU and Brazil - Partners for Climate Protection and Energy Security] accessed February 13, 2014, <http://www.kas.de/brasilien/de/publications/19835/>; “Communication From The Commission To The European Parliament and The Council: Towards an EU-Brazil Strategic Partnership,” KOM (2007) 281, Commission of the European Communities, Brussels, 2007, 2.

⁴⁹ Günther Maihold, “Strategische Partnerschaft und schwacher Interregionalismus: Die Beziehungen zwischen Brasilien und der EU,” [Strategic Partnership and Weak Interregionalism: The Relations between Brazil and the EU] in: Annegret Bendiek/Heinz Kramer (Hrsg.), *Globale Außenpolitik der Europäischen Union. Interregionale Beziehungen und “strategische Partnerschaften* [Global Foreign Policy of the European Union. Interregional Relations and “Strategic Partnerships”], Baden-Baden 2009.

In the first EU-Brazil summit, which was held in Lisbon on July 4, 2007, the two partners formalized the comprehensive strategic partnership and defined a number of priority areas for action, including: strengthening effective multilateralism, including a reform of the UN system and the promotion of human rights, and cooperation on global challenges. In addition to the political issues, several economic as well as practically oriented topics of mutual interest were discussed, for instance, economic and financial issues, information society, air and maritime transport, science and technology, satellite navigation, social affairs and regional development and integration.⁵⁰ The last summit between the representatives of the EU and Brazil took place in January 2013. Official observers suggested that recession in Europe and the economic slowdown in Brazil have focused both parties on the opportunities that closer engagement might bring reinvigorated growth.⁵¹

B. CLIMATIC OBJECTIVES IN THE STRATEGIC PARTNERSHIP

The area of environmental and climate protection has become *the* major focus of the common goals of the Strategic Partnership. Brazil's environment is one of the richest in the world. Brazil's natural wealth includes not only the dense tropical rainforests of the Amazon, but also the important biomes of the savannah-like Cerrado, the arid scrublands of the Caatinga, the Atlantic Forest, the grasslands of the Pampa and the wetlands of the Pantanal. Much of Brazil's fauna and flora are found nowhere else on earth, its ecosystems contain more than 15 percent of the plant and animal species known to science. Brazil also holds 12 percent of the world's available fresh water. According to the Ministry of the Environment, the value of environmental services rendered by Brazil's ecosystems (in terms of mega-biodiversity conservation and carbon sequestration) is several trillion euros per year. Therefore, Brazil has a key and strategic role to play on a global scale, a role that the country has assumed since it is party to a

⁵⁰Jesper Tvevad, "Lateinamerika." [Latin America] European Parliament, 2012, 6–7.

⁵¹Elena Lazarou, "The Sixth EU-Brazil Summit: Business Beyond the Usual?" ESPO Policy Brief No. 8, European Strategic Partnerships Observatory, FRIDE and the Egmont Institute, Madrid and Brussels, 2013.

number of international conventions on environmental issues (biodiversity,⁵² climate change/Kyoto Protocol, desertification, endangered species, etc.) and participates actively in international conferences on the environment. Therefore, Brazil is a key partner in the EU's campaign for a stronger commitment of the international community to the fight against climate change and further decline in biodiversity.⁵³

The fight against climate change and global warming is given a high priority within the EU. This position is also established in the first documents of the ESS, which were published in 2003.⁵⁴ The significance of necessary measures against climate change has since gained significantly in importance.⁵⁵ The climate objectives outlined in the documents are consistent with the climate goals of the United Nations, which were defined by the Framework Convention on Climate Change.⁵⁶ Although the basic goals are consistent, concerning the implementation of individual goals, no common consensus was reached between the EU and the UNFCCC. This circumstance results primarily from the condition that the EU's negotiating results must always be embodied in a multilaterally and contractual manner.⁵⁷ Often, these conditions are only conditionally

⁵²Biodiversity is the degree of variation of life. This can refer to genetic variation, species variation, or ecosystem variation within an area, biome, or planet. Terrestrial biodiversity tends to be highest at low latitudes near the equator, which seems to be the result of the warm climate and high primary productivity. Marine biodiversity tends to be highest along coasts in the Western Pacific, where sea surface temperature is highest and in mid-latitudinal band in all oceans. Biodiversity generally tends to cluster in hotspots, and has been increasing through time but will be likely to slow in the future. Rapid environmental changes typically cause mass extinctions.

⁵³"Communication From The Commission To The European Parliament and The Council: Towards an EU-Brazil Strategic Partnership," KOM (2007) 281, Commission of the European Communities, Brussels, 2007, 8.

⁵⁴"Ein sicheres Europa in einer besseren Welt—EUROPÄISCHE SICHERHEITSSTRATEGIE," [A Secure Europe in a Better World—EUROPEAN SECURITY STRATEGY] Rat der Europäischen Union [Council of the European Union], Brussels, 2003, accessed March 25, 2014, <http://consilium.europa.eu/uedocs/cmsUpload/031208ESSIIDE.pdf>, 3.

⁵⁵"Report on the Implementation of the European Security Strategy—Providing Security in a Changing World," European Union External Action Service, Brussels, 2008, accessed March 25, 2014, http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressdata/EN/reports/104630.pdf, 5–6.

⁵⁶European Commission, "Ratification of the second commitment period of the Kyoto Protocol to the United Nations Framework Convention on Climate Change," COM(2013) 768 final, Brussels 2013, accessed March 25, 2014, http://ec.europa.eu/clima/policies/international/negotiations/docs/com_2013_768_en.pdf, 2–4.

⁵⁷Thomas Renard and Giovanni Grevi, "Hot Issues, Cold Shoulders, Lukewarm Partners: EU Strategic Partnerships and Climate Change," European Strategic Partnerships Observatory (ESPO), FRIDE 2012, Madrid, 2012, 6.

acceptable for many negotiators of the EU. In addition, the Commission of the EU has to coordinate all measures of the different EU member states. This additional administrative level makes demanding situations even more complicated. Moreover, first approaches to climate policy cooperation between the EU and Brazil were already present before the conclusion of the Strategic Partnership, e.g., the 1992 pilot program PPG7.⁵⁸ Nevertheless, between both partners there are still different opinions about which programs and activities are most suitable to achieve the objectives of the fight against climate change. Nevertheless, the EU and Brazil are aware that a guarantee of sustainable prosperity and economic growth for both regions is inevitably associated with environmental protection and resource conservation. Subsequently, this shared belief holds for the continued close cooperation between the EU, its member states, and Brazil.

As committed partners, the EU and Brazil are very active in several areas of environmental protection, especially in the conservation of the rain forests in the Amazon Basin, the management of water resources, the marine environment, global mercury pollution,⁵⁹ and the unsustainable patterns of current consumption and production models. The EU has been leading the effort to reduce carbon emissions through technological innovations, taxation of energy products, and measures to curb energy demand. In addition, Brazil has passed national legislation including binding reduction targets, while discretely mediating between advanced and emerging or developing countries in the run-up to the Durban summit in December 2011.⁶⁰ In addition, the

⁵⁸The PPG7 is a multilateral initiative of the Brazilian government, civil society and the international community aimed at developing innovative tools and methodologies for conserving Brazil's rain forests. **Program objective:** to maximize the environmental benefits of rain forests through the implementation of pioneering projects that contribute to the ongoing reduction of the deforestation rate in Brazil. The Program was launched in 1992 with financial support from the governments of Germany, the Netherlands, Italy, France, Japan, Canada, the United Kingdom and the United States, and from the European Commission and the Brazilian Government, World Bank, accessed March 25, 2014, <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20757004~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>.

⁵⁹Exposure to mercury, even in small amounts, is a great danger to humans and wildlife. When mercury enters the body it acts as a neurotoxin, which means it harms our brain and nervous system. Mercury exposure is especially dangerous to pregnant women and young children, but all adults are at risk for serious medical problems. Most mercury pollution is produced by coal-fired power plants and other industrial processes. Mercury also enters into the environment through the improper disposal (e.g., land filling, incineration) of certain products.

⁶⁰ Grevi, "The EU and Brazil: Partnering in an Uncertain World?" 10.

European Commission maintains a regular environmental and climate protection dialogue with Brazil.

The documents of the Strategic Partnership show mainly that the EU and Brazil are committed partners in many areas of environmental protection, especially in the conservation of rain forests, the management of water resources, the marine environment, the global mercury challenge and unsustainable patterns of consumption and production models.⁶¹ Moreover, the EU and Brazil cooperate in international forums and establish bilateral consultations concerning environmental issues. In addition, the European Commission and Brazil maintain a regular environmental and climate protection dialogue. Within the documentation for the Strategic Partnership, the organization of collaboration is written in very general terms and the implementation of concrete measures is missing. The specific configuration and implementation of projects takes place primarily through additional bilateral arrangements between individual member states of the EU and Brazil.

C. ECONOMIC OBJECTIVES IN THE STRATEGIC PARTNERSHIP

The achievement of fiscal and economic objectives is at least as highly rated as the realization of goals in the areas of environmental protection and resource conservation.⁶² For Europe, the importance of the Latin American region in general and of Brazil in particular is impressively confirmed by official EU data sets concerning the bilateral investments and economic involvement of European countries.⁶³ Furthermore, Brazil is one of the major trading partners of the EU, and in addition to this, the EU is one of the largest donors of development funds. However, as already mentioned in the previous section on the climate protection targets, within the documents for the Strategic Partnership between Brazil and the EU no specific projects for implementation of

⁶¹“Communication From The Commission to The European Parliament and The Council: Towards an EU-Brazil Strategic Partnership,” KOM (2007) 281, Commission of the European Communities, Brussels, 2007, 8.

⁶²Renard and Grevi, “Hot Issues, Cold Shoulders, Lukewarm Partners: EU Strategic Partnerships and Climate Change,” 7.

⁶³“Trading with Mercosur,” European Commission, accessed March 25, 2014, <http://ec.europa.eu/trade/policy/countries-and-regions/regions/mercosur/>.

measures for sustainable development are mentioned in the economic field. Moreover, the formulation of general terms in the bilateral agreements between Brazil and the individual EU member states enables the partners to implement concrete measures with sufficient flexibility. Thus, the documents of the Strategic Partnership contain only interpretational statements concerning cooperation in the fields of information technology, civil aviation, maritime transport and maritime governance, science, technology, innovation and satellite navigation. In these areas, further incentives for mutual investment and economic cooperation should be created. In addition, the framework of the Strategic Partnership may serve as a dialogue for financial and macroeconomic issues.⁶⁴

Significantly, the aspect of dialogue and cooperation with MERCOSUR is a component of the Strategic Partnership. Negotiations with the union MERCOSUR started in 1995 have not achieved a conclusion. In January 2013, in Santiago, Chile, official representatives of the MERCOSUR and the EU held a Ministerial meeting on the further development of the relationship. In a joint communiqué, the official representatives highlighted the importance of the economic, trade and cultural relations between both regions, taking into account the combined population of more than 780 million people, a combined GDP of \$20.8 trillion and bi-regional trade of around \$130 billion per year.⁶⁵ Thus, as far as the economic relationship between the EU and Brazil is concerned, Brazil should be much more than a mere enabler for the negotiations with MERCOSUR.

D. HOW TO MONITOR THE PROGRESS OF THE STRATEGIC PARTNERSHIP

In order to implement the common goals of the Strategic Partnership effectively, sectoral policy dialogues are set up as needed. As mentioned earlier, the respective dialogues are present in the context of economic and financial policy. It was decided that

⁶⁴“Communication From The Commission to The European Parliament and The Council: Towards an EU-Brazil Strategic Partnership,” KOM (2007) 281, Commission of the European Communities, Brussels, 2007, 13.

⁶⁵“Joint Communiqué of the MERCOSUR-European Union Ministerial Meeting, Santiago/Chile 2013,” European Union, Trade Policy, accessed March 25, 2014, http://trade.ec.europa.eu/doclib/docs/2013/january/tradoc_150458.pdf.

the EU-Brazil Joint Committee meet annually to discuss the progress of the bilateral cooperation.⁶⁶ To underpin the Strategic Partnership, leaders adopted a second three-year (2012–2014) EU-Brazil Joint Action Plan at the summit in October 2011. The program's aim to consolidate and further promote the partnership covers five main areas: peace and security through an effective multilateral system; economic, social, and environmental partnership to encourage sustainable development; regional cooperation; science, technology and innovation; and exchange between citizens. Furthermore, summits are held annually and focus on key global challenges. The summits focus on such topics as the maintenance of peace and security, climate change, developments in the international economy, as well as the analysis of the respective regional situations. The summits held so far (Rio de Janeiro, June 1999; Madrid, May 2002; Guadalajara, May 2004; Vienna, May 2006; and São Paulo, October 2008) have highlighted a number of converging political values between the EU and Brazil. The EU and Brazil share core values and interests, including a respect for the rule of law and human rights, concern about climate change, and the pursuit of economic growth and social justice at home and abroad. Brazil is a vital ally for the EU in addressing these and other challenges in international fora.⁶⁷ The Vienna Summit confirmed the two priority themes at the core of discussions: regional integration and social cohesion in Latin America.

The European Court of Auditors (ECA) carried out an audit of the environmental aspects of development cooperation in Brazil.⁶⁸ The audit's findings highlight the relevance of the EU contribution to controlling deforestation and sustainable development of the Amazon rain forest. In addition, the ECA reports that the EU's efforts take into account the global effects of the environmental degradation of the Brazilian biome and the links between the country's poverty reduction and environmental management. Furthermore, the relation between good governance and law enforcement

⁶⁶“European Union-Brazil Strategic Partnership Joint Action Plan,” Council of the European Union, 15084/11, Brussels, October 4, 2011, 5.

⁶⁷“Brazil-Country Strategy Paper 2007–2013,” European Commission, (E/2007/889), 2007, 13.

⁶⁸“SPECIAL REPORT No 6/2006 Concerning the Environmental Aspects of the Commission's Development Cooperation, together with the Commission's Replies,” Court of Auditors, *Official Journal of the European Union* C 235/1, Luxembourg, 2006.

and environmental management is also addressed by the EU's commitments. The ECA notes that projects are riddled with implementation problems. Consequently, the respective solution for future projects is that only continuous support can secure success on the long-term sustainability of Brazil's development subjects.

E. IS SUSTAINABILITY MEASUREABLE?

Considering the difficulties related to the monitoring of projects linked to the Strategic Partnership between the EU and Brazil, a major problem occurs: how to set a generally applicable definition of sustainability? According to the World Commission on Environment and Development (WCED), "Arriving at a commonly accepted definition of sustainable development remains a challenge for all the actors in the development process."⁶⁹ The term "sustainability" is ubiquitous and is also linked with a variety of topics, for instance, environment, development, and economy. In 1987, the WCED tried to set a definition for sustainability in their final report, "Our Common Future." Nevertheless, there is still no universal or generally accepted definition of the term.

Despite the problems, which are linked to lack of a precise definition, there is a general consensus in the research literature that sustainable development includes the social, economic, and environmental dimensions.⁷⁰ It is unrewarding to regard social affairs, economy, and ecology as independent systems; instead, these systems must be understood with their mutual interdependence and interactions. Therefore, the measurement of sustainable development is a vague concept that can be interpreted differently depending on the perspectives, value perceptions, and interests. Thus, within the scope of the Strategic Partnership between the EU and Brazil, no consistent measurement of sustainability is possible and is therefore subject to mutually recognized perception.

⁶⁹"Our Common Future. The World Commission on Environment and Development," WCED, (New York: Oxford University Press, 1987), 45.

⁷⁰Bea Wittger, "Der Clean Development Mechanism in Brasilien – Nachhaltigkeitsstandards in Theorie und Praxis," [The Clean Development Mechanism in Brazil - Sustainability Standards in Theory and Practice] Wuppertal: Wuppertal Institut für Klima, Umwelt, Energie GmbH [Wuppertal Institute for Climate, Environment and Energy], 2010, 26.

F. WHAT ARE THE ARGUMENTS AGAINST A STRATEGIC PARTNERSHIP?

Considering the objectives and the problems linked to the implementation, the Strategic Partnership between the EU and Brazil has underperformed in many ways. Apart from cultural references, the perception of Europe's engagement in Brazil is still strongly influenced by commercial interests. The aspects of the commitment to such common values as democracy and human rights are overtly less important.⁷¹ Not surprisingly, the EU has already concluded bilateral free trade agreements with Chile and Mexico. In contrast, relations with Brazil, by far its most important economic and political partner in Latin America, have been characterized as relatively underdeveloped and of mutual "benign neglect."⁷²

The EU acknowledged Brazil's role as an emerging economy and its increasing power in international forums, like the World Trade Organization (WTO). Indeed, the EU tried to benefit from Brazil's leading role. Therefore, besides the critique that the Strategic Partnership is strongly focusing on trade issues, another crucial issue is related to the subject of global governance. Although, as mentioned previously, both partners set up a Joint Action Plan, their perceived centers of gravity are not completely congruent. Obviously, the EU seeks to create new regimes while preserving or adjusting the rules and composition of traditional multilateral frameworks in a cautious and incremental way. Brazil is less interested in new governance enterprises, but rather aims to transform the balance of power and some of the normative parameters underpinning existing institutions.

Given the possible effects of tight budgets, there is a risk that the EU will start throwing generic strategies at problems as opposed to developing clear shared priorities

⁷¹Susanne Gratius, "Brasilien und die EU: Wachsende Distanz trotz Wertegemeinschaft," [Brazil and the EU: Growing Distance despite being a Community of Values] *Die EU im Beziehungsgefüge großer Staaten: komplex – kooperativ – krisenhaft* [The EU in the relational structure of large states: complex - cooperative - critical], ed. Kai-Olaf Lang and Gudrun Wacker (Berlin: SWP-Studie, Stiftung Wissenschaft und Politik Deutsches Institut für Internationale Politik und Sicherheit [SWP-Study, German Institute for International and Security Affairs], 2013), 17.

⁷²Alfredo Valladão, "Brazil: A 'Strategic Partner' for the EU?" *An International Actor and Partner for the EU?* ed. Susanne Gratius, IBSA: Madrid: Fundación para las Relaciones Internacionales y el Diálogo Exterior (FRIDE), July 2008 (Working Paper 63), 17.

and pursuing them by anticipating events rather than reacting to them. For instance, the EU has adopted a “Strategic Framework for the Horn of Africa” and a “Strategy for Security and Development in the Sahel,” both in 2011. In contrast to the realism on the EU side, Brazil, as an “anti-status quo power” and a leading power in the South, does not share the EU’s view of the world and therefore cannot be judged solely by “Western” standards.⁷³

G. WHAT IS THE WAY AHEAD?

Despite some political differences, the EU and Brazil definitely share common values in seeking recognition, prestige, and influence. But so far, the parties have implemented different power strategies—the former anchored to the so-called Western camp; the latter, bent on countering challenges through soft balancing.⁷⁴ In particular, a common history, shared respect for human rights and ethnic, religious, and cultural diversity, and a common vision of international relations based on the principles of multilateralism are generating an increasing demand for a meeting of minds and academic exchanges, driven by institutions on both sides.

The international system is changing fast, and both the EU and Brazil must adapt.⁷⁵ As the crises in Libya, Syria, Mali, and most recently Ukraine demonstrate, Europeans must take more responsibility to support stability around the Union and its vicinity, including military means as a last resort. For the EU, deepening interdependence requires enhanced engagement in various frameworks of international cooperation. As a relatively open power in economic terms and relying on energy provisions as well as other natural resources from abroad, the EU is critically dependent on the resilience of globalization. Closer engagement between the EU and Brazil would offer the opportunity to challenge binary narratives on the fledgling international order (old vs. new powers;

⁷³Wolf Grabendorff, “Brazil - A ‘Secure’ Partner for the European Union?” Noref Guest Writer Articles, Norwegian Peacebuilding Resource Centre, October 2009, 1–3.

⁷⁴Susanne Gratius, “Brazil and the EU: Between Balancing and Bandwagoning,” ESPO Working Paper No. 2, European Strategic Partnerships Observatory, FRIDE and the Egmont Institute, Madrid and Brussels, 2012.

⁷⁵Grevi, “The EU and Brazil: Partnering in an Uncertain World?” 1.

North vs. South) and to make a difference together.⁷⁶ In other words, as Albert Fishlow points out, “The EU, in the midst of its own difficulties, is seeking to retain a role.”⁷⁷

Basically, the Strategic Partnership between Brazil and the EU is as much interest-driven as directed by normative ideas. Because Brazil shares political and economic values with the EU, it is an important political partner for the country, especially, when it comes to resolving regional or international conflicts through negotiations or to claim the return to democracy. For the first time, this situation provides summitry an approach for a strategic alliance on the regional and international stage—an opportunity that must be seized in mutual interest. To achieve this goal, the dialogue on such controversial issues as trade and climate protection must be intensified significantly.

According to the European Commission’s Strategy Country Paper, securing a sustainable environment for future generations is an important strategic objective for the Commission. Ensuring sustainable management of natural resources, combating deforestation and increasing the percentage of nationally protected areas are also amongst Brazil’s objectives.⁷⁸ The impact of action on the environment can be maximized if an operational and systematic mechanism for consultation between stakeholders at various levels is implemented and if donors join forces and resources, closely liaising with Brazilian authorities.

⁷⁶*Ibid.*, 9.

⁷⁷Albert Fishlow, *Starting Over: Brazil since 1985*, (Washington, D.C.: Brookings Institution Press: 2011), 191.

⁷⁸“Brazil - Country Strategy Paper 2007–2013,” European Commission, (E/2007/889), 2007, 22.

THIS PAGE INTENTIONALLY LEFT BLANK

III. THE CLEAN DEVELOPMENT MECHANISM IN BRAZIL

In its foreign policy, Brazil oscillates between the claim to represent the interests of the states of the southern hemisphere and emerging economies, on the one hand, and the desire, on the other hand, to be perceived as an equal participant in the forum of the industrialized countries. Brazil seeks greater influence in international politics, and it simultaneously defends the principles of non-intervention and self-determination.⁷⁹ Thus, Brazil takes the principle of common, but differentiated, responsibility as the basis for the negotiations of the UN Conference on Environment and Development of 1992. Specifically, Brazil argues that developing and emerging countries have no obligation to reduce emissions because of the developed countries' historical responsibility for climate change.⁸⁰ Consequently, the obligation to finance climate-change measures in the southern hemisphere falls to the countries of the northern hemisphere.⁸¹

Brazilian climate policy is informed by a domestic policy of market-oriented growth, which contributed to the rise of Brazil as an emerging country. Even today, however, the nation's right to development entails some requisite pollution of the environment according to these principles.⁸² For this reason, Brazil initially rejected any international agreements or partnerships that would limit its sovereignty. However, within the Group of 77, plus China, the Brazilian government gradually revised this intransigent position, toward the EU and the United States.⁸³

⁷⁹Claudia Zilla, "Brazil and Climate Policy: A Creative Partner with High Potential," in *International Climate Policy Priorities of Key Negotiating Parties*, ed. Susanne Dröge (Berlin: German Institute for International and Security Affairs, 2010), 91.

⁸⁰Friberg, "Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged," 398.

⁸¹David Michael Gößmann and Yesko Quiroga, *Klima, Energie und Wachstum in Brasilien: Auf der Suche nach einem friedlichen Zusammenleben* [Climate, Energy and Growth in Brazil: In Search of a Peaceful Coexistence] (Quito: FES, 2012), 5.

⁸²Alan Boyle, "Human Rights and the Environment: A Reassessment," (London: Essex Court Chambers, 2010), 8.

⁸³Dieter Nohlen, *Lexikon Dritte Welt: Länder, Organisationen, Theorien, Begriffe, Personen* [Encyclopedia of the Third World Countries: Organizations, Theories, Concepts, Persons] (Hamburg: Rowohlt Taschenbuch Verlag GmbH [Rowohlt Paperback Publishers], 2002), 347.

At the end of 2009, in advance of the Copenhagen Climate Summit, Brazil pledged to reduce its greenhouse gas (GHG) emissions for 2020. Based on an economic growth rate of 4 percent to 6 percent a year, emissions were projected to decline from 38.9 percent to 36.1 percent.⁸⁴ On the basis of its second report under the Framework Convention on Climate Change, Brazil predicted that its current GHG emissions would increase, without counter measures, by 2020 by about half, up to 3.2 gigatons.⁸⁵

Although, since the first global negotiations on climate change, there have been defined targets for reducing GHG emissions, numerous states have repeatedly refrained from implementing the agreed upon objectives in a national climate policy. These countries, to include Brazil, have always cited national constraints in explaining the delays in implementation. Brazil still has not adopted the objectives of the base year 1990 that were defined by the Kyoto Protocol for industrialized countries.⁸⁶ Furthermore, shortly after the Copenhagen agreement became national law and even amid the mounting effects of global climate change, Brazil's objectives to reduce CO₂ emissions were transformed to lower CO₂ limits.⁸⁷ Consequently, Brazil adapted its plans for the implementation of emissions reduction. The goal is to reduce total CO₂ emissions by 38 percent until 2020. Although these targets are a reduction compared with the expected yield in 2020, the total emissions for Brazil will increase accordingly in comparison to the current values. In addition, Brazil announced its intention to initiate cooperative efforts with other countries in Latin America and Africa in the fight against climate change.

⁸⁴Camila Moreno, "Green Economy and Development(alism) in Brazil – Resources, Climate and Energy Politics," in *Inside a Champion: An Analysis of the Brazilian Development Model*, ed. Dawid Danilo Bartelt (Rio de Janeiro: Heinrich Böll Foundation, 2012), 46.

⁸⁵Peter Sopher and Anthony Mansell, "Brazil—The World's Carbon Market: A Case Study Guide to Emissions Trading," Environmental Defense Fund (EDF) and International Emissions Trading Association (IETA), (Washington, DC: 2013), 1. The current Brazilian objective is to avoid emissions growth over 2 gigatons.

⁸⁶United Nations Framework Convention on Climate Change, Kyoto Protocol base year data, accessed November 22, 2013, http://unfccc.int/ghg_data/kp_data_unfccc/base_year_data/items/4354.php.

⁸⁷David Michael Gößmann and Yesko Quiroga, *Klima, Energie und Wachstum in Brasilien: Auf der Suche nach einem friedlichen Zusammenleben* [Climate, Energy and Growth in Brazil: In Search of a Peaceful Coexistence] (Quito: FES, 2012), 5.

Moreover, this approach is consistent with the foreign policy orientation of Brazil and the intensification of the so-called South-South cooperation of the BRICS countries. This development not only illustrates the growing Brazilian awareness of the consequences of global climate change, but also reaffirms the country's commitment to take regional and global responsibility. Thus, Brazil was able to strengthen its position in the international climate debate.⁸⁸ But so far, no concrete projects have yet resulted from the announced cooperation on climate change.

A. THE CLEAN DEVELOPMENT MECHANISM

The CDM is one of three flexible mechanisms in the Kyoto Protocol to reduce CO₂ emissions. To facilitate the industrialized countries' achievement of the objectives of the Kyoto Protocol, the agreement integrated three different flexible mechanisms: emissions trading,⁸⁹ Joint Implementation (JI),⁹⁰ and the Clean Development Mechanism.⁹¹ The detailed procedures for the CDM are itemized in Article 12, which enables governments or private corporations from developed countries to carry out emission reduction projects in developing countries. For those GHG emissions that have been reduced, the more developed countries receive Certified Emission Reductions (CERs), which are credited to their respective national reduction targets.⁹² With CDMs, governments, companies, or so-called Carbon Funds invest in climate protection projects abroad, such as in plants for the production of renewable energy, in increasing energy efficiency, or in the neutralization of methane gases from waste management. As a result, they receive carbon credits in the amount of GHG emissions saved. The investors and project partners can use these carbon credits in the host country for billing their own

⁸⁸Claudia Zilla, "Brazil and Climate Policy: A Creative Partner with High Potential," 91–92.

⁸⁹A state, which exceeds its emission targets, can sell its 'pollution quotas' to other countries.

⁹⁰This mechanism differs from the CDM in that the project is not carried out in a developing country, but in an industrialized country.

⁹¹United Nations, Kyoto-Protocol, 1998: articles 6, 12, and 17; Jørgen Fenhann and Miriam Hinostroza, "CDM Information and Guidebook," UNEP Risø Centre on Energy, Climate and Sustainable Development (Roskilde: 2012), 11.

⁹²Karen Holm Olsen, "The Clean Development Mechanisms Contribution to Sustainable Development: A Review of the Literature," *Climate Change* 84, no. 10 (2007): 60.

reduction commitments and sell the credits on the carbon market.⁹³ Because of its good design and its high quality, the Brazilian CDM market enjoys a generally good reputation. As a consequence, Brazilian CERs are traded at a higher level, compared to Chinese or Indian CERs.

The purpose of the CDM is to assist countries in achieving sustainable development and in contributing to the ultimate objectives of the Convention. Additionally, the CDM serves to assist countries in achieving compliance with their quantified emission limitation and reduction commitments under Article 3 of the Kyoto Protocol. In addition, the CDM seeks to achieve a stabilization of GHG concentrations in the atmosphere through projects that are intended (1) to explicitly contribute to the sustainability of the host country; and (2) to enable industrialized countries to adapt cost-efficient emission reductions in developing countries.⁹⁴

B. NATIONAL PLAN ON CLIMATE CHANGE: THE CDM IN BRAZIL

From the outset, Brazil has been strongly involved in the negotiations for the CDM, and its proposal for a Clean Development Fund was vital for the emergence of the CDM. The government of Brazil declares that effective measures to mitigate climate change in developing countries can only be achieved through technology transfer and financial incentives, useful for reducing the angular coefficient of the sigmoid curve of the GHG emissions during the economic development phases.⁹⁵

Brazil is proud of this significant contribution to the development of the CDM and sees itself as a pioneer in the development of suitable projects and project methods,⁹⁶ as well as establishment of the Brazilian Designated National Authority (DNA) and its national sustainability standards.

⁹³Elmar Altvater and Achim Brunnengräber, “Ablasshandel gegen Klimawandel? Marktbasierte Instrumente in der globalen Klimapolitik und ihre Alternativen,” [Selling of Indulgences Against Climate Change? Market-based Instruments in Global Climate Policy and its Alternatives] (Hamburg: VSA-Verlag [VSA Publishers], 2008), 13.

⁹⁴United Nations, Kyoto-Protocol, 1998: article 12.2.

⁹⁵GTZ, “CDM/JI Initiative Country Study—Brazil,” 33–34.

⁹⁶Friberg, “Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged,” 398.

In 2004, Brazil was the site of the world's first CDM project registered by the UN Executive Board (EB).⁹⁷ CDM projects have proliferated in Brazil ever since. Between 2006 and 2008, the EB registered an increase of CDM projects in Brazil by 129 percent.⁹⁸ As of June 30, 2011, some 499 projects had been approved nationwide. (The majority of CDM projects are in the southeast and the southern parts of the country, particularly in the states of São Paulo (21 percent) and Minas Gerais (14 percent).)⁹⁹ Today, Brazil ranks fourth in the world for CDM projects, right after India, Indonesia, and China,¹⁰⁰ and Brazil is one of the largest CDM host countries in the world.

In the first commitment phase, from 2004 until 2008, the expected emission reductions from Brazilian CDM projects amount to 330,722,468 tons of CO₂-equivalent (CO₂e),¹⁰¹ i.e., 6 percent of the total global reductions.¹⁰² With an assumed value of \$16.25 per unit, the potential gains from CDM projects in Brazil, therefore, are nearly \$5.4 billion—\$5,375,583,441, to be exact. This sum illustrates the economic relevance of CDM projects both for the Brazilian economy and for investors alike. Thus, for Brazil, the CDM could be quite a significant cash injection.

⁹⁷Responsible UN body for the international recognition of CDM projects.

⁹⁸GTZ, "CDM/JI Initiative Country Study—Brazil: A CDM Market Overview," Eschborn: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) [German Agency for Technical Cooperation] GmbH (2008), 12.

⁹⁹CIMGC, "Status atual das actividades de projeto no âmbito do Mecanismo de Desenvolvimento Limpo (MDL) no Brasil e no mundo," [Current Status of Project Activities under the Clean Development Mechanism (CDM) in Brazil and in the World] accessed November 24, 2013, http://www.mct.gov.br/upd_blob/0026/26987.pdf, 11.

¹⁰⁰The World Bank, Projects and Operations, CDM Project Count, accessed November 16, 2013, <http://www.worldbank.org/projects/search?lang=en&searchTerm=CDM>.

¹⁰¹Carbon dioxide equivalent (CDE) and equivalent carbon dioxide (CO₂e) are two related but distinct measures for describing how much global warming a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration of carbon dioxide (CO₂) as the reference.

¹⁰²CIMGC, "Status atual das actividades de projeto no âmbito do Mecanismo de Desenvolvimento Limpo (MDL) no Brasil e no mundo," accessed November 24, 2013, http://www.mct.gov.br/upd_blob/0026/26987.pdf, 4.

C. CDM PROJECTS IN BRAZIL

With a share of 37 percent of all CDM projects in Latin America, Brazil is the leader in the region. The EB already has issued CERs for 92 registered projects.¹⁰³ See Table 2.

Project Category	Number of Projects	Percentage
Energy from biomass	43	26
Hydro power	34	21
Wind energy	4	2
Dump gas production and usage	25	15
Methane reduction in pig breeding	42	26
Industrial gases (N ₂ O, SF ₆ , PFC)	6	4
Fossil Fuel Switch	5	3
Industrial Energy efficiency	2	1
Miscellaneous	3	2
TOTAL	164	100

Table 2. CDM Projects in Brazil.

Since the introduction of CDM in Brazil, Project Design Documents (PDD) have been submitted for validation of a total of 447 projects.¹⁰⁴ In relation to the 499 registered CDM projects, 90 percent are located in the PDD phase. By far, the largest existing project is the N₂O-emission reduction at the Adipic acid plant of the French company Rhodia in Paulínia, in the state of São Paulo, which was expected to save about

¹⁰³Germany Trade and Invest, “CDM Markt kompakt,” [CDM Market Compact] Cologne: 2009.

¹⁰⁴Ministério da Ciência, Tecnologia e Inovação [Ministry of Science, Technology and Innovation], CDM Project Activities, accessed November 30, 2013, http://www.mct.gov.br/index.php/content/view/43004/CDM_Project_Activities_received_by_the_Executiv_e_Secretariat_of_the_Interministerial_Commission.html.

5.9 million tons of CO₂e per year by 2012.¹⁰⁵ Furthermore, by August 2009, 211 projects reached the next administrative level and have been approved at the national level by the DNA.¹⁰⁶

The following comments are intended to provide a short overview of different climate protection measures, which are currently implemented in Brazil. According to scholarly opinion, these areas have great potential for further development.

(1) Renewable Energies. More than 81 percent of all CDM projects developed in Brazil are renewable energy projects.¹⁰⁷ Of these, however, the major part is concentrated in the area of energy from biomass, hydropower, and wind energy. Only about 6 percent of the renewable energy projects are classified as wind energy, and none are solar energy projects. Considering Brazil's great natural potential for these two technology sectors, more CDM projects should be expected in the future.¹⁰⁸

(2) Biofuel Sector. An increase in the ethanol content in the biodiesel production is an alternative to be explored in the CDM framework. In this case, the CERs are generated from projects in which the percentage of biodiesel added to regular diesel exceeds the National Program for Biodiesel parameters (above 5 percent).¹⁰⁹

(3) Transport. In most of Brazil's major cities, public transportation is inefficient. Projects with more efficient systems, like rapid bus transit, are eligible for the CDM market, working as an incentive for investments in this sector. For this activity,

¹⁰⁵United Nations Framework Convention on Climate Change, "N₂O Emission Reduction in nitric acid plant Paulínia, SP, Brazil," accessed November 30, 2013, <http://cdm.unfccc.int/Projects/DB/DNV-CUK1174479298.53/>.

¹⁰⁶CDM Project Activities, Designated National Authority (Interministerial Commission on Global Climate Change), accessed December 1, 2013, www.mct.gov.br/index.php/content/view/4016.html.

¹⁰⁷Luiz Carlos Jacob Perera, Roberto Borges Kerr, Herbert Kimura and Fabiano Guasti Lima, "Investing in Clean Development Mechanism (CDM) Projects in Brazil," *Journal of Operations and Supply Chain Management* 3, no.1 (2010): 4–8.

¹⁰⁸GTZ, "CDM/JI Initiative Country Study—Brazil," 31.

¹⁰⁹John Wilkinson and Selena Herrera, "Biofuels, Climate Change and Sustainability in Brazil," BRAZIL Instituto Interamericano de Cooperación para la Agricultura, 2010, 5–15.

there is already a methodology approved for both the baseline and the monitoring by the CDM Executive Board.¹¹⁰

(4) Solid Waste Sector. In the case of methane avoidance projects, the majority of the big Brazilian landfills are already operating within the CDM framework. Nevertheless, due to a consistent lack of solid waste management infrastructure, especially in medium and small cities, there is still a vast market potential for these types of projects. In this case, the generation of CERs could be an important incentive for the construction of new landfills. The German bank for reconstruction (Kreditanstalt für Wiederaufbau—KfW) announced in July 2009 its purchase of certificates for 2.4 million tons of CO from the Novo Gramacho landfill operator in the state of Rio de Janeiro up to the year 2012.¹¹¹ By 2015, the savings in CO could be up to 6.4 million tons of CO₂e.

(5) Pyrolysis. Pyrolysis¹¹² is the heating of an organic material, such as biomass, in the absence of oxygen. Because no oxygen is present the material does not combust but the chemical compounds (i.e., cellulose, hemicellulose, and lignin) that make up that material thermally decompose into combustible gases and charcoal. Most of these combustible gases can be condensed into a combustible liquid, called pyrolysis oil (bio-oil), though there are some permanent gases (CO₂, CO, H₂, light hydrocarbons). Thus, pyrolysis of biomass produces three products: one liquid, bio-oil; one solid, bio-char; and one gaseous (syngas). The pyrolysis can be used for waste treatment in association with the landfills sites. In this case, the biogas from the disposal area would be burned in the furnace of pyrolysis reactors. The pyrolysis process can reduce significantly the volume of the waste and up to 90 percent of its weight. The sub-product

¹¹⁰United Nations Framework Convention on Climate Change, “The Buses of Brazil: Connectivity - Intelligent Transport Solution,” accessed December 1, 2013, http://unfccc.int/secretariat/momentum_for_change/items/6639.php.

¹¹¹Dow Jones TradeNews Emissions, “KfW kauft bis zu 2,4 Mio CERs aus Brasilien an,” [KfW Buys up to 2.4 million CERs from Brazil] accessed December 1, 2013, http://klimabonus.com/article160_12066.html.

¹¹²“What Is Pyrolysis?” United States Department of Agriculture, Agricultural Research Service, accessed January 22, 2014, <http://www.ars.usda.gov/Main/docs.htm?docid=19898>.

of this treatment is rich in carbon and can be used in the industry as a solid fuel for boilers and furnaces. Pilot projects are already initiated.¹¹³

(6) Wastewater Treatment Plants. The biogas generated in an anaerobic wastewater treatment plant is normally flared. By improving the technology to capture the biogas, making the flaring more efficient, these projects could be developed as CDM projects.¹¹⁴ The generation of energy and thermal power using this gas is also an alternative for obtaining CERs. In the case of small plants with a low methane emission level, the plants could be grouped in a Programmatic Approach (PoA), i.e., the bundling of many small actions. Depending on the treatment process there is no obligation for biogas capture (i.e., Anaerobic Lagoons).

(7) Energy Efficiency. A so-far untapped aspect of the Brazilian market is energy efficiency in the industrial sector.¹¹⁵ Industrial enterprises are responsible not only for 44 percent of total energy consumption in Brazil, but also for the highest waste of energy. The Brazilian state energy-holding ELETROBRÁS believes that there is a huge energy savings potential mainly in electromechanical drives, responsible for more than 50 percent of the energy consumption in the country's industrial sector.¹¹⁶

For instance, ArcelorMittal Tubarão launched the first major project for its steelworks in Espírito Santo, north of Vitória. Through the use of blast furnace gas to generate electricity, ArcelorMittal plans to save a total of 900,000 tons CO₂e. In addition, ArcelorMittal uses further savings in production and transportation for CDM projects. The potential of Energy Efficiency measures could be fully made available under the CDM by the Programmatic Approach.

¹¹³GTZ, "CDM/JI Initiative Country Study—Brazil," 32.

¹¹⁴Mark Lazarowicz, *Global Carbon Trading: A Framework for Reducing Emissions*, (Norwich: TSO 2010), 127–130.

¹¹⁵GTZ, "CDM/JI Initiative Country Study—Brazil," 32.

¹¹⁶Christophe de Gouvello, "Brazil Low-carbon Country Case Study," (Washington, D.C.: World Bank, Energy Sector Management Assistance Program, 2010), 55–64.

(8) LULUCF. Land use, land use change, and forestry (LULUCF) loom particularly large in the country's emissions profile (77 percent).¹¹⁷ LULUCF projects are only beginning to enter the mainstream on the international market, and temporary CERs are still cheap, but the development of such projects is neither cheap nor quick to design and implement. Therefore, at least for the first commitment period, LULUCF projects are not expected to play a significant role in the Brazilian CDM market. On the other hand, on the voluntary market, they play a quite important role, especially in connection with compensation of company emissions and corporate social responsibility measures. For several reasons, forestry measures play only a subordinate role in the CDM context, both in Brazil and internationally.

PoAs offer an interesting way to support the insertion of new technologies in specific industrial sectors (i.e., solar power), where an initial set of facilities would be committed in the registration and further units could be incorporated into the PoA at a later stage. Currently, two Brazilian PoAs of the food producer Sadia await registration by the EB for methane avoidance projects in pig farming.

Currently, forestry projects in Brazil are carried out especially for the voluntary market.¹¹⁸ Landfill sites are considered to be another interesting field, not least due to numerous waste scandals and the problems of waste disposal. The landfill site projects reduce methane emissions from Brazil's largest garbage dumps and ranks among the top five in the UN Framework Convention on Climate Change in this category. Now, all major landfill sites in the country are used for the CDM.

¹¹⁷Anke Herold, "Berücksichtigung von Treibhausgasemissionen und -festlegungen durch Landnutzungsmaßnahmen (LULUCF) im Post-Kyoto-Regime – Quantitative Analyse zur Einbeziehung von reduzierter Entwaldung in ein künftiges Klimaregime," [Consideration of Greenhouse Gas Emissions and Repairs by Land Use Activities (LULUCF) in the post-Kyoto Regime - Quantitative Analysis for the Inclusion of Reduced Deforestation in a Future Climate Regime] (Berlin: Öko-Institut [Institute for Applied Ecology], 2008), 39.

¹¹⁸In contrast to the strict rules set out for the mandatory market, the voluntary market provides companies with different options to acquire emissions reductions.

D. CRITICISMS OF BRAZILIAN CDMs

The main focus of the critiques that can be found in the literature is on the financial aspect of the CDM projects and not on an assessment of specific CDM measures. Concerning the administrative process, it is the sovereign responsibility of each developing country to ensure that a CDM project promotes sustainable development.¹¹⁹ The various host countries hold different views on what characterizes sustainable development within a CDM process.¹²⁰ For developing countries, sustainability is closely linked to the economic development opportunities. Thus, it seems likely that countries implement CDM projects only for possible financial benefits.

From individual projects in Brazil, even with a larger investment perspective, only a small part of the population is able to benefit.¹²¹ The CDM projects are geographically very unevenly distributed. Thus, the benefits of the project-based approaches are limited and the impacts of the CDM measures are concentrated only at the local level. For example, through the implementation of CDM measures only the local population gets access to clean natural resources and the biodiversity can be protected only in the territory that surrounds the project. These restrictions also apply to the labor market; new jobs will be created only in the immediate vicinity of the project.

Another aspect of the Brazilian CDM efforts is related to the effects of technology transfer that remain initially limited because of the project-specific approach and the only gradual spread of information. According to the regulations of the Kyoto Protocol, it speaks for the efficiency of the mechanism that the largest share of funds is flowing into the states where the greatest reduction potential lies. At the same time, however, it was decided at the UN Climate Change Conference in Bali in 2007 that the fees for CDM projects in the least developed countries would be eliminated in order to promote the

¹¹⁹ Friberg, "Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged," 405–407.

¹²⁰ Susanne Dröge, "The International Climate Policy Negotiations: Objectives, Themes, and Prospects for Success," in *International Climate Policy Priorities of Key Negotiating Parties*, ed. Susanne Dröge (Berlin: German Institute for International and Security Affairs, 2010), 25–27.

¹²¹ Dietmar Mirkes, "Ökologischer Fußabtritt statt nachhaltiger Entwicklung," [Ecological Footprint Instead of Sustainable Development] in *CDM-Brennpunkt* [CDM focal point] (2011), 13.

implementation of projects in these countries.¹²² However, the CDM only selectively improves the business environment for climate change investments. Consequently, other instruments of international climate policy, such as UN and national funds as well as development aid are better suited for building the necessary financial framework. In the short term, it is likely that greater contributions to climate protection can be provided. In addition, the developing countries still need resources to support their adaptations to climate change.

Even very effective CDM projects cannot negate their fundamental flaw: as good as it is that GHG, especially the strong ones, are no longer released into the atmosphere, we must not forget that the exact same amount of GHG emissions will be released into the air somewhere else. Good things in the southern hemisphere neutralize bad things in the northern hemisphere. Both environmentally and morally, the whole CDM mechanism appears to be an ultimately zero sum game, which allows “business-as-usual” to continue.¹²³

E. CONCLUSION

About ten years after adopting the implementation rules under the UNFCCC conference of Marrakesh, the CDM proved in an impressive way to dynamically extend a market-based approach to the global level.¹²⁴ Over the years, the CDM developed a comprehensive compendium of methods and initiated significant learning processes at the project stage, as well as at the national and international level. In addition, the global awareness on climate change is a great accomplishment of the project-based mechanisms.

The experiences with the CDM also revealed several weaknesses of the general approach that required a continuing readjustment. In this way, the introduction of

¹²²United Nations Framework Convention on Climate Change, “Decisions of the Bali Climate Change Conference - December 2007,” accessed April 20, 2014, http://unfccc.int/meetings/bali_dec_2007/meeting/6319/php/view/decisions.php.

¹²³Mirkes, “Ökologischer Fußabtritt statt nachhaltiger Entwicklung,” 11.

¹²⁴Nicolas Kreibich and Heiko Fechtner, “Potentiale ausgeschöpft und Hürden überwunden? CDM und JI in der ersten Kyoto-Verpflichtungsperiode,” [Potentials Exploited and Obstacles Overcome? CDM and JI in the First Kyoto Commitment Period] Wuppertal Institut für Klima, Umwelt, Energie GmbH, May 2013, 30.

programmatic CDM achieved significant improvements in the geographical and sectorial distribution, and also in proving the additionality of projects, as significant progress has been made. In addition, the CDM Executive Board succeeded in optimizing its processes and procedures, which led to a significant reduction of delays in project registration.¹²⁵ While the individual project-like interventions have so far been unable to initiate adequate changes in each sector that would be necessary for a fundamental transformation of the economic structure of the host country, now the expansion through the programmatic CDM enables the potential for broader changes in the host countries.

It remains to be seen whether the increasing number of newly created PoAs are suitable to initiate sectoral changes. A systematic expansion of the CDM towards a sectoral mechanism, as well as a greater integration of CDM activities in the medium- and long-term strategies of the host countries could help to strengthen the performance of the CDM in this field even further. However, other weaknesses of the CDM have not been successfully solved so far, especially to ensure high contributions of projects for sustainable development of the host countries.¹²⁶ The individual project types have large differences in their sustainability impacts, due to the lack of an international standard for assessing sustainability contributions.

However, the development of the project mechanisms should be continued. The importance of these mechanisms for the nascent market mechanisms and the 2015 global climate agreement is not to be underestimated. Together with the experience of the first commitment period of the Kyoto Protocol, major foundations for the further development of the international climate regime can hereby be created.

F. THE BRAZILIAN DEFINITION OF SUSTAINABILITY

As described in the previous section, from the outset, Brazil has been strongly involved in the negotiations for the CDM, and its proposal for a Clean Development

¹²⁵CDM Policy Dialogue, *Climate Change, Carbon Markets and the CDM: A Call to Action - Report of the High-Level Panel on the CDM Policy Dialogue* (2012), accessed February 16, 2014, <http://www.cdmpolicydialogue.org/report/rpt110912.pdf>, 52–55.

¹²⁶ Kreibich and Fechtner, “Potentiale ausgeschöpft und Hürden überwunden? CDM und JI in der ersten Kyoto-Verpflichtungsperiode,,” 31.

Fund was vital for the emergence of the CDM. Brazil is proud of this significant contribution to the development of the CDM and sees itself as a pioneer in the development of suitable projects and project methods.¹²⁷

1. The Designated National Authority

By Presidential Decree of July 7, 1999, the former Brazilian President Fernando Henrique Cardoso initiated the foundation of the Interministerial Commission on Climate Change (Comissão Interministerial de Mudança Global do Clima—CIMGC), the respective Brazilian DNA.¹²⁸ The official governmental decree came into force in July 1999. Thereby, Brazil was the first country worldwide that established such a commission.¹²⁹ The CIMGC meets every two months and consists of representatives from eleven ministries.¹³⁰ The Ministry of Science and Technology is the chair of the CIMGC and acts as Executive Secretariat, while the Ministry of Environment takes over as Deputy Chairman.¹³¹ The Brazilian DNA is an inter-ministerial model of an approval authority.¹³² Consequently, all relevant ministries are integrated on a permanent basis, which guarantees a large bandwidth of expertise. However, this model is criticized

¹²⁷ Friberg, “Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged,” 395–424.

¹²⁸ “Designated National Authority (Interministerial Commission on Global Climate Change),” Ministério da Ciência, Tecnologia e Inovação, accessed April 20, 2014, <http://www.mct.gov.br/index.php/content/view/14666.html>.

¹²⁹ “Portataria Nº 533, de 29 de agosto de 2000,” [Law No. 533 of August 29, 2000] Regimento Interno Comissão Interministerial de Mudança global do Clima [Internal Regiment Interministerial Commission on Global Climate Change], accessed March 2, 2014, http://www.mct.gov.br/upd_blob/0001/1545.pdf, article 3.

¹³⁰ It entails the Ministry of Foreign Affairs, the Ministry of Agriculture, the Ministry of Transport, the Ministry of Mines and Energy, the Ministry of Budget Planning and Administration, the Ministry of Environment, the Ministry of Science and Technology, the Ministry of Development, Industry and Foreign Trade, the Office of the President, and the Ministry of city management; Lars Friberg, “Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged,” 395–424.

¹³¹ “Portataria Nº 533, de 29 de agosto de 2000,” Regimento Interno Comissão Interministerial de Mudança global do Clima, accessed March 2, 2014, http://www.mct.gov.br/upd_blob/0001/1545.pdf, §1 and §3.

¹³² There are additional models for the institutionalization of the DNAs: the single government model, the two-unit model, the FDI-piggyback model, and the outsourcing model. Axel Michaelowa and Daisuke Hayashi, “Efficient DNA Operation: Lessons from Different DNA Settings in non-Annex-B Countries,” HWWI Research Paper 4–10, Hamburg (2007): Hamburgisches WeltWirtschaftsInstitut [Hamburg Institute of International Economics], 5.

because all ministries need to be involved in the decisions making process. Consequently, this bears a great potential to trigger conflicts of interest and to cause disproportionately high costs.¹³³

The tasks of the CIMGC include, among other things, the support and advice of the Brazilian government in international climate negotiations, evaluation and approval of CDM projects, the verification of compliance with the legislation during the CDM process, communication of decisions to the outside setting, and the development and examination of the sustainability criteria for CDM projects.¹³⁴

Generally, the Brazilian DNA has the prerogative to determine the sustainability criteria for all national CDM projects. It is subject to no international orders or specifications. As discussed in the previous section, there is no generally accepted definition of the term sustainability to which the national institutions may be able to relate in their decisions making process. It is therefore essential that the Brazilian DNA clearly defines its understanding of a sustainable development. That appears to be the only possibility in which appropriate inputs for the development of verifiable indicators can be implemented.

2. Center for Integrated Environmental and Climate Studies

In 2000, the CIMGC commissioned the Center for Integrated Environmental and Climate Studies (Centro de Estudos sobre Meio Ambiente e Integrados Mudanças Climáticas—Centro Clima) with the development of sustainability criteria for CDM projects. Subsequently, these criteria should have been submitted to the CIMGC to serve as a basic document for discussion and guidance in terms of the final evaluation of the Brazilian CDM criteria. The established standards by the Center for Integrated Environmental and Climate Studies are based on the study *Criteria and Indicators for*

¹³³Michaelowa and Hayashi, “Efficient DNA Operation: Lessons from different DNA settings in non-Annex-B Countries,” 6.

¹³⁴“Portataria Nº 533, de 29 de agosto de 2000,” Regimento Interno Comissão Interministerial de Mudança global do Clima, accessed March 2, 2014, http://www.mct.gov.br/upd_blob/0001/1545.pdf, article 3.

Compared to the original proposal of standards, the CIMGC ultimately made a decision for sustainability criteria in a much-reduced scope that entails a framework of guidelines. Instead of a concrete assessment based on a defined point scale, which is carried out by the DNA itself, currently the project developers have to describe their project using the following five criteria.¹³⁶

1. Contribution to local, ecological sustainability: Therefore, the climate impact of the project has to be evaluated in comparison to the estimated climate change mitigation effect of a reference scenario.¹³⁷
2. Contribution to the field of job creation and the development of social working conditions: The contribution of the project concerning civil rights, health and education programs, as well as social and workplace responsibility has to be evaluated. In addition, an evaluation of the direct and indirect improvements of the working conditions has to be conducted. Moreover, this evaluation has to be compared to the reference scenario.
3. Contribution to income distribution: The direct and indirect socio-economic effects on the quality of life of the population with low incomes have to be evaluated again in comparison to the reference scenario.
4. Contribution to education and technological development: Here, the degree of technological innovation is compared to a reference scenario and entails the origin of the technology, the reproducibility, the existence of royalty, and the necessary support to sustain the development.

¹³⁵Centro Clima [Climate Center], “Proposta Revisada de critérios e indicadores de elegibilidade para avaliação de projetos candidatos ao Mecanismo de Desenvolvimento Limpo (MDL),” [Revised Proposal of Criteria and Indicators for Assessing the Eligibility of Potential Projects for the Clean Development Mechanism (CDM)] Rio de Janeiro: Centro de Estudos Integrados sobre Meio Ambiente e Mudanças Climáticas [Center for Integrated Studies on Environment and Climate Change], accessed February 27, 2014, <http://www.centroclima.coppe.ufrj.br/index.html>.

¹³⁶“Resolução N°1, de 11 de setembro de 2003,” [Resolution No. 1 of September 11, 2003] Comissão Interministerial de Mudança global do Clima, accessed March 2, 2014, <http://carbono.brasilcooperativo.coop.br/sites/1400/1480/00000070.pdf>, Appendix III.

¹³⁷The reference scenario is part of the methodology for CDM. The methodology includes afforestation and reforestation projects, requires development of a baseline which indicates what emissions would occur in the absence of the project: credits are issued on the basis of the difference between this ‘business as usual’ scenario and the emissions or removals attributable to the project. The baseline represents the counterfactual case, and thus the target to be beaten.

5. Regional integration and the impact of the project on other sectors: The contribution to regional development can be evaluated by the integration of the project with a comparison to other socio-economic activities in the region.

When the description of the sustainability benefits is perceived to be inadequate, the project developers will be given a period of 60 days to adapt the description.

According to Branca Americano,

There is no threshold for any of these five aspects or headings, nor any kind of indicator for any of them, nor any measure for all the aspects of sustainable development. The DNA takes into account the project itself based on the document (the so-called Appendix No. III), which explains the contribution to sustainable development and takes into consideration the whole picture. In many cases the CIMGC requests additional information and clarification about the contribution envisaged to some of the sustainable development aspects described by the project proponent.¹³⁸

The specified Brazilian sustainability criteria include all three dimensions of sustainable development.¹³⁹

1. Internalization of the profits from the CERs in the national economy,
2. Possibility of regional integration and cross effects with other areas,
3. Potential of technological innovation.

Therefore, Brazil is following the international minimum consensus. Although if all three dimensions are taken into account, the social dimension is in contrast to the environmental and economic dimensions represented to a much lesser extent. This suggests that there is a bias of the DNA to act investor-friendly and, above all, to encourage economic development.

¹³⁸Branca Americano, "CDM in Brazil: Towards Structural Change for Sustainable Development in Some Sectors," in *A Reformed CDM-Including new Mechanisms for Sustainable Development*, ed. Karen Holm Olsen and Jørgen Fenhann (Copenhagen: UNEP-Risø Centre on Energy, Climate and Sustainable Development CD4CDM, 2008), 23–35.

¹³⁹Centro Clima, "Proposta Revisada de critérios e indicadores de elegibilidade para avaliação de projetos candidatos ao Mecanismo de Desenvolvimento Limpo (MDL)," Rio de Janeiro: Centro de Estudos Integrados sobre Meio Ambiente e Mudanças Climáticas, accessed February 27, 2014, <http://www.centroclima.coppe.ufrj.br/index.html>.

With regard to the selection of the sustainability criteria, it can be stated that the Brazilian DNA did not make a good choice. Faced with a weak definition of sustainability and an insufficient operationalization, a highly subjective assessment of the sustainability benefits of CDM projects is very likely.

IV. TWO CDM PROJECTS

This chapter tests Brazil's sustainability standards in the concrete cases of two CDM projects. Specifically, it will examine whether the sustainability criteria match the practice. The CDM project of Plantar S.A. entails the mitigation of methane emissions in the production of charcoal; the CDM project of Vallourec & Mannesmann do Brazil (V&M do Brazil) is a renewable electricity generation project. Both projects focus on planting eucalyptus trees and their exploitation for the production of charcoal. In UNFCCC terms, these projects are so-called sink projects.¹⁴⁰ Granted the similar characteristics of the two projects, their effects on climate and economy are closely linked.

A. THE PLANTAR PROJECT

The company Plantar S.A. was founded in 1967 and is currently owner of approximately 465,000 acres of land in the state of Minas Gerais. At the time of its founding, the Brazilian government offered tax incentives for eucalyptus plantations. The company was formed initially to take advantage of these tax benefits. In 1984, the industrial production of pig iron was integrated into the corporate group through the establishment of the subsidiary Plantar Siderúrgia. In 2001, the company had a turnover of \$85 million;¹⁴¹ it is expected to post annual savings of 16,098t CO₂e.¹⁴² The CDM

¹⁴⁰“Sink means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.” UNFCCC, 1992: article 1, § 8.

¹⁴¹Tobias Schmitt, “Saubere Entwicklung für den Süden? Der Clean Development Mechanism und seine regionalen Auswirkungen: Am Beispiel von Eukalyptusplantagen in Curvelo, Südost-Brasilien,” [Clean Development for the South? The Clean Development Mechanism and its Regional Implications: the Example of Eucalyptus Plantations in Curvelo, Southeast Brazil] in *Wirtschafts- und sozialräumliche Strukturwandlungen und Interessenskonflikte in Lateinamerika* [Economic and socio-spatial structure changes and conflicts of interest in Latin America], ed. G. Kohlhepp, 2005, 355.

¹⁴²UNFCCC, CDM – Executive Board Project Design Document Form for Afforestation and Reforestation Project Activities (CDM-AR-PDD)—Version 04, accessed April 6, 2014, http://www.netinform.net/KE/files/pdf/PDD_AR_Plantar.pdf, 14.

project of Plantar S.A. is financed by the World Bank's Prototype Carbon Fund, which was launched in 2000.¹⁴³ The project entails four project components.

The first two components of the project involve 57,500 acres of the company's eucalyptus plantation in the Cerrado region, located in the municipalities of Belo Horizonte, Curvelo, Felixlândia, and Morada Nova de Minas.¹⁴⁴ This part of the project is an integrated approach for the production of pig iron with a simultaneous reduction of CO₂. Concerning the first component of the project, the eucalyptus plantation not only stores CO₂ from the atmosphere, but the wood from the eucalyptus trees is also used for the production of charcoal. The second component entails the use of this charcoal for the company's production of industrial pig iron.

The third component of the project relates to the reduction of the methane gas emissions from the charcoal production, which is achieved by a corresponding improvement in the production process. Automatic ignition devices are used to ensure the combustion of the gas in the coal stoves, which subsequently prevents the emergence of emissions.¹⁴⁵

The fourth component of the project refers to the restoration of 1000 acres of native *Cerrado* vegetation on former pastures and eucalyptus plantations.¹⁴⁶

¹⁴³Peter H. May, Emily Boyd, Manyu Chang, and Fernando Veiga, "Local Sustainable Development Effects of Forest Carbon Projects in Brazil and Bolivia. A View from the Field," Center for International Forestry Research, accessed March 1, 2014, http://www.cifor.org/publications/corporate/cd-roms/bonn-proc/pdfs/papers/T6_FINAL_May.pdf, 21.

¹⁴⁴"Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC," accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0022/22065.pdf, 4.

¹⁴⁵*Ibid.*, 6.

¹⁴⁶"Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC," 1; Tobias Schmitt, "Saubere Entwicklung für den Süden? Der Clean Development Mechanism und seine regionalen Auswirkungen: Am Beispiel von Eukalyptusplantagen in Curvelo, Südost-Brasilien," 357.

The Executive Board approved and registered the project on August 9, 2007. Significantly, the responsible Designated Operational Entity,¹⁴⁷ the Norwegian company Det Norske Veritas, was asked three times to revise and adopt the submitted documents to address two issues: first, the more accurate representation of project benefits and second, the rationale for further consideration of the CDM criteria.¹⁴⁸ In March 2007, the CDM project of Plantar S.A. received the final Letter of Approval (LoA) from the CIMGC, and the project's benefits for Brazil's sustainable development were officially confirmed.¹⁴⁹

It has to be assumed that a previous examination of the PDD has satisfied the CIMGC. On the webpage of the CIMGC, Appendix III of Resolution No.1, in which the sustainability benefits of the project must be described in terms of the five criteria, is only available in the Portuguese language.¹⁵⁰ Thus, access to the contents is only guaranteed for stakeholders who speak Portuguese.

1. Appendix III

Plantar S.A. claims, in Appendix III of the LoA, contributions to:

- local ecological sustainability
- job creation and development of social working conditions
- income distribution
- education and technological development
- regional integration and the impact of the project on other sectors.

¹⁴⁷A designated operational entity is an independent auditor accredited by the CDM Executive Board (CDM EB) to validate project proposals or verify whether implemented projects have achieved planned greenhouse gas emission reductions; UNFCCC, accessed March 1, 2014, <http://cdm.unfccc.int/DOE/index.html>.

¹⁴⁸"Project: 1051 Mitigation of Methane Emissions in the Charcoal Production of Plantar, Brazil – History," Project Cycle Search, UNFCCC, accessed March 24, 2014, <http://cdm.unfccc.int/Projects/DB/DNV-CUK1175235824.92/history>.

¹⁴⁹"Federative Republic of Brazil—Interministerial Commission on Global Climate Change, Letter of Approval," March 23, 2007.

¹⁵⁰"Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar," [Mitigation of Methane Emissions in the Charcoal Production of Plantar] Ministério da Ciência, Tecnologia e Inovação, accessed March 17, 2014, <http://mct.gov.br/index.php/content/view/58160.html>.

In regard to its contribution to local, ecological sustainability, the company compares its production method to conventional production. Plantar S.A. states that for conventional charcoal production, large parts of the original rain forest would have to be cut down. The production of charcoal would also be possible only under unhealthy conditions for the rural population. The furnaces used for such charcoal production are technically very simple and could thus release large amounts of methane gas. Compared to this reference scenario, the improved furnaces and the sophisticated production technology lead to a considerable reduction of the greenhouse gas methane.¹⁵¹ Moreover, for its charcoal production, Plantar S.A. uses only wood from its own eucalyptus plantations. Consequently, the company is able to rely on a “clean and sustainable energy source.”¹⁵² Furthermore, the CO₂, which is released during the production, counts as “carbon neutral” because it is compensated by carbon storage in the eucalyptus plantations.

In addition to these improvements, Plantar S.A. emphasizes that the topic of environmental awareness is anchored in the company’s policy. Moreover, the company explains that only scientifically proven methods and techniques to protect the environment will be implemented.¹⁵³ In this context, the company notes the monitoring plan for its projects. This plan provides a strong monitoring process with specific indicators relating to fauna, flora, water, and social aspects. In addition, the company points to commissioned studies on the socio-ecological influences of the eucalyptus plantations and the special protection of threatened species. According to Appendix III of the CIMGC resolution, sustainability criteria will also be used to meet several objectives in the biomass production.¹⁵⁴ The precise criteria and objectives are not explained more fully in the Appendix III. Finally, Plantar S.A. mentions the five environmental licenses

¹⁵¹According to Plantar S.A., the reduction of methane will be almost 50 percent. “Anexo III da Resolução N° 1 da Comissão Interministerial de Mudança Global do Clima. Contribuição do Projeto de Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar, Fevereiro 2007,” [Appendix III of Resolution No. 1 of the Interministerial Commission on Global Climate Change. Contribution Project Mitigation of Methane Emissions in the Charcoal Production of Plantar, February 2007] accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0019/19345.pdf, 4.

¹⁵²Ibid., 4.

¹⁵³Ibid., 4.

¹⁵⁴Ibid., 5.

granted to the company for its plantations by the respective authorities, which determine a part of the legal framework for the project.

As far as job creation and the development of social working conditions, which is the second requirement of Appendix III, Plantar S.A. states it is able to generate approximately 1,000 jobs per year for the rural population for the designated 28-year duration of the project. The workers would be needed both in the forestry sector and in charcoal production. A further 200 jobs per year could be created in the company's pig iron production. Appendix III also emphasizes the good technical and hygienic equipment of the workplace. Other benefits for employees are comprehensive medical care and free transportation to the workplace. Also, the company's employees receive a monthly distribution of food staples, in-house education and promotion programs, physical training, and, if necessary, compensation benefits.¹⁵⁵ Plantar S.A. also has policies and programs for comprehensive, social activities in the region, such as prevention of accidents and environmental protection.¹⁵⁶

Regarding the contribution to income distribution, the third requirement of Appendix III, Plantar S.A. states that the company prefers to work with local enterprises for the internal supply of materials, products, and services. Thus, the company contributes to a better distribution of income in the region, which relates to the indirect creation of jobs. In addition, the CDM project contributes to a better quality of life, as rising incomes significantly improve the quality of life of many families and residents in the region of the project. For comparison purposes, Plantar S.A. points to a reference scenario with otherwise low economic activity of the region and a low per capita income of the local population.¹⁵⁷

¹⁵⁵“Anexo III da Resolução Nº 1 da Comissão Interministerial de Mudança Global do Clima. Contribuição do Projeto de Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar, Fevereiro 2007,” accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0019/19345.pdf, 6.

¹⁵⁶Ibid., 7.

¹⁵⁷Ibid., 8.

Regarding the fourth requirement of Appendix III, Plantar S.A. emphasizes the use of improved technologies. These improvements include the in-house developed enhancements of the furnaces and a technical improvement of the production process. In particular, the training and development of the staff personnel, as well as the introduction of instruments for measuring and monitoring the temperatures and emissions are included in the new features. According to Plantar S.A., the new technologies are based on external scientific investigations that have been carried out over a period of two years. These studies have confirmed an associated reduction in methane emissions.¹⁵⁸ Furthermore, Plantar S.A. evaluates the development of new technologies and their application to the charcoal production as a result of the direct incentive and merit through the CDM.¹⁵⁹

In connection with the regional integration and the impact of the CDM project to other sectors, the fifth requirement of Appendix III, the company states that the project promotes two issues. On the one hand, the project has been successful concerning the creation and maintenance of rural jobs in the plantations. On the other hand, with the charcoal production, it provides an essential raw material for the making of pig iron. (Pig iron is used in the iron, steel, and auto industries in southeastern Brazil, as well as in Asia, Europe, and the United States.) In this way, the company secures a majority of the urban and industrial jobs in the region of Belo Horizonte.

At the micro-regional level, thanks to the decentralized procurement policy of the company, the project has positive effects on the local communities and businesses. The meals for the company's workers are bought exclusively in the neighboring communities. In addition, the company supports other local services, for example, transportation and the processing of wood. Therefore, according to Plantar S.A., the project promotes the socio-economic integration of urban and rural areas, such as regional development and the creation of direct and indirect jobs in industry, agriculture, and services.¹⁶⁰

¹⁵⁸Ibid., 9.

¹⁵⁹“Anexo III da Resolução n 1 da Comissão Interministerial de Mudança Global do Clima. Contribuição do Projeto de Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar, Fevereiro 2007,” accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0019/19345.pdf, 9, 13.

¹⁶⁰Ibid., 14.

2. PDD Analysis

Overall, there are some similarities in both documents. Section D of the PDD describes the environmental impacts of the project. According to the PDD of Plantar S.A., the project has no negative impacts on the environment. Therefore, a certification by the Forest Stewardship Council (FSC) is utilized to guarantee a sufficient control of the plantations in terms of their social, environmental, and economic compatibility.¹⁶¹ Like Appendix III, Section D.2 of the PDD is referring to the expected positive social impacts of the project. In addition, the indicators of the assessment concerning the sustainability impacts are mirrored in both documents. The health program of the company, which aims to ensure comprehensive health care for the employees, is especially emphasized. As in Appendix III to the PDD, the high sustainability benefits of the project both for the region and for the Brazilian nation are highlighted.¹⁶²

Section E.1 of the PDD describes the procedure of the stakeholder consultations. According to the PDD, the stakeholder consultation took place in two phases.¹⁶³ The first round of consultations was conducted in October 2001. In accordance with the requirements of the CIMGC, the second phase of the stakeholder consultation took place between November and December 2006. During both phases, the PDDs were made available for public comments on the websites of the PCF, the UNFCCC, and of Plantar S.A.. Subsequently, in the Section E.2 of the PDD, all received comments from the stakeholders are summarized. In the first phase of the consultation, the stakeholders have emphasized the overall need to fulfill the sustainability goals of the project at the local and regional level.

¹⁶¹“Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC,” accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0022/22065.pdf, 49.

¹⁶²“Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC,” 49.

¹⁶³The comments were solicited during the first phase of the project activities regarding renewable forestry in the eucalyptus plantations for the production of charcoal for pig iron production. In the second phase comments were requested regarding the project component of reforestation as a renewable energy source for the industry in Brazil and with respect to the project component reduction of methane emissions in charcoal production; “Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC,” 50.

According to the PDD, the comments of the stakeholders are related to two major topics: the components of reforestation as a renewable energy source and the components of the use of wood for the production of charcoal for pig iron manufacturing. Moreover, the stakeholders did not make any comments regarding the project objectives for reducing methane emission from charcoal production. Unfortunately, from the PDD documents, it is not possible to extract the concerns that were expressed in reference to the approval of the project. For the second phase of the consultation, the comments relate to the component of reforestation as a renewable energy source and the reduction of methane emissions in charcoal production. Some stakeholders recommend the sustainability benefits of the project for the region as a positive example for other companies.¹⁶⁴ According to the PDD, the stakeholders' comments relate primarily to the environmentally friendly use of the company's technology.

According to the PDD, the Environmental Council of Itacambira urged Plantar S.A. to update the list of environmental protection zones in its documents. The non-governmental organization (NGO) Brazilian Forum of Non-Governmental Organizations and Social Movements for the Environment and Development (Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento Sustentável e Meio Ambiente—FBOMS)¹⁶⁵ declared its strong interest to examine the documents provided by the company. However, FBOMS pointed out, due to a lack of technical and financial support from the government, it would not be able to conduct the examination of the company's documents. Therefore, the comment of FBOMS in regards of the PDD only includes the

¹⁶⁴Community center of Vargem Grande (Itacambira), the communitarian association of Melerio (Curvelo), the Municipal School Duque de Caxias (Morada Nova de Minas), the Campo Alegre Community (Curvelo), and the Itacambira Environmental Council (CODEMA); "Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC," 53.

¹⁶⁵The Brazilian Forum of Non-Governmental Organizations and Social Movements for the Environment and Development (FBOMS) was founded in 1990 in order to facilitate the participation of Brazilian civil society groups during the 1992 Conference of the United Nations for the Environment and Development in Rio de Janeiro.

proposal to use the gold standard criteria¹⁶⁶ or other additional sustainability criteria for the project.

In the Section E.3, information must be provided regarding the implementation or consideration of stakeholder comments received. In this section, it is stated that no specific or relevant comments from the first consultation phase had been submitted. Consequently, no changes would have been necessary to be implemented. According to the PDD, all comments that have been received and the corresponding answers will be published on the website of the PCF. Likewise, the most important information and reports on forest certification on the website of an independent certification authority will be published.¹⁶⁷

According to the PDD, the comments that have been received from the second phase were answered immediately. The requirements of the Environmental Council of Itacambira would have been promptly met by the adaptation of detailed maps of the environmental protection zones in the region of Itacambira. The technical representatives of FBOMS were invited for a visit of the project sites. The recommendation of the NGO to use additional sustainability criteria was answered with a reference to the certifications of plantations by the FSC and the use of social and environmental indicators.¹⁶⁸

On the basis of the analyzed PDD, the CIMGC initiated the issuance of the LoA. Since the Brazilian DNA only evaluates validated PDDs, it can be assumed that the investigated PDD has been checked by the Designated Operational Entity (DOE) Det Norske Veritas and has been approved accordingly. An examination of the validation

¹⁶⁶The Gold Standard is a standard for creating high-quality emission reductions projects in the Clean Development Mechanism Joint Implementation and Voluntary Carbon Market. It was designed to ensure that carbon credits are not only real and verifiable but that they make measurable contributions to sustainable development worldwide. Its objective is to add branding, a label to existing and new Carbon Credits generated by projects, which can then be bought and traded by countries that have a binding legal commitment according to the Kyoto Protocol.

¹⁶⁷“Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1, UNFCCC,” 53.

¹⁶⁸*Ibid.*, 54.

report confirms this assumption. There is no objection concerning the stakeholder involvement or the sustainability benefits of the project.¹⁶⁹

As mentioned previously, a second international phase of stakeholder consultation was carried out. The DOE has the responsibility to make the project documentation available to the public at the international level during the validation process. Therefore, for a period of 30 days, international stakeholders can make comments and express their concerns about the project. According to the DOE, during this phase, no comments on the project were transmitted.¹⁷⁰

The official document analysis can be utilized to clarify the company's official view regarding the sustainability benefits of its CDM project. The investigation of Appendix III, the PDD, and the validation report shows that Plantar S.A. and the DOE Det Norske Veritas evaluate the project in an especially positive manner. Possible negative effects on people and the environment of the region are not mentioned anywhere in the official documents.

B. THE UTE-BARREIRO PROJECT

The company Vallourec & Mannesmann do Brasil S.A. was founded in 2000 as a subsidiary company of Vallourec & Mannesmann Tubes.¹⁷¹ The company is the global market leader in the production of seamless steel tubes. Currently, V&M do Brasil owns approximately 587,500 acres of land in the state of Minas Gerais. Like Plantar S.A., V&M do Brasil uses the landholding for the cultivation of eucalyptus trees. These eucalyptus plantations cover the entire timber needs of the company and are led by another subsidiary company (V&M Florestal). Moreover, the plantations of the company

¹⁶⁹“Validation Report: Mitigation of Methane Emissions in the Charcoal Productions of Plantar in Brazil.” Report No. 2007-0196, UNFCCC, accessed March 1, 2014, <http://cdm.unfccc.int/filestorage/E/Z/G/EZG7AT3C7CHD70USTN3L11WK05JNQC/ValRep.pdf?t=VWp8bjFzODVvfDD7hGdZ-To9TunfAsmOHIBr>, 15.

¹⁷⁰*Ibid.*, 16.

¹⁷¹Vallourec & Mannesmann Tubes is a joint venture of the French Vallourec Group (with a share of 55 percent) and the German Mannesmann tube works (with a share of 45 percent); “Clean Development Mechanism Project Design Document Form (CDM-PDD),” UTE Barreiro S.A. Renewable Electricity Generation Project, Version 4, prepared by EcoSecurities Ltd, 2005, accessed March 3, 2014, http://www.mct.gov.br/upd_blob/0021/21393.pdf, 4.

V&M Florestal have been certified by the FSC.¹⁷² Consequently, V&M do Brasil makes use of its own eucalyptus plantations for the production of charcoal and steel.

The CDM project entails the construction and operation of a thermoelectric plant. In addition, it is expected to generate electricity for the steel plant of the company, which is located in the community Barreiro de Baixo in Belo Horizonte. The plant is fueled with excess wood tar and blast furnace gas to produce energy. Both, the blast furnace gas, as well as the tar emerges as a by-product of the steel and charcoal production.

The Executive Board approved and registered this CDM project of V&M do Brasil on January 22, 2006. Previously, the responsible DOE Det Norske Veritas had been asked four times to review the submitted documents. Like in the Plantar S.A. case, the reworking of the project documents included two issues: the more accurate representation of project benefits and the rationale for further consideration of the CDM criteria. The project has the capacity to generate 20.5 million tons of CO₂ emission reduction equivalents over a 21-year timeframe. This is broken down as 15.8 million tons CO₂ from fuel switch for the industrial activities (use of charcoal as opposed to coke), and 4.7 million tons CO₂ from the capture of methane in carbonization activities.¹⁷³

The CIMGC provided a LoA in September 2005 and confirmed officially the sustainability benefits of the CDM project of the company V&M do Brasil for the country.¹⁷⁴ Accordingly, it must be assumed that the CIMGC was satisfied with the examination of the PDD and the Appendix III of the LoA. Appendix III is, as in the case of the Plantar S.A. project, only available in Portuguese and is accessible only for stakeholders with knowledge of the Portuguese language.

¹⁷²Ibid., 13.

¹⁷³“CDM Project Portfolio for Brazil,” UN Interagency PROJECT GLO/99/H06 (Brazil), 2003, United Nations Industrial Development Organization (UNIDO), accessed March 3, 2014, http://www.unido.org/fileadmin/import/12897_Brazil_portfolio_UNIDO.pdf, 53.

¹⁷⁴“V&M do Brasil-Letter of Approval,” Federative Republic of Brazil Interministerial Commission on Global Climate Change, 2005.

1. Appendix III

V&M do Brasil claims in Appendix III¹⁷⁵ of the LoA contributions to:

- local ecological sustainability
- job creation and development of social working conditions
- income distribution
- education and technological development
- regional integration and the impact of the project on other sectors

In regard to the contribution to the local ecological sustainability, V&M do Brasil states that the company initiated an environmental impact assessment to be able to estimate the direct environmental consequences and impacts of the project in an adequate manner. The following effects have been studied in the context of this examination: air quality and the consumption of fossil fuels, the level of ambient noise, water quality, biodiversity, and socio-economic and socio-political implications.

According to Appendix III, negative effects have been found with reference to the ambient noise. In particular, the workers in the plant and the neighboring communities had to suffer from the specific noise conditions. Therefore, to prevent physical harm, the workers must wear special protective and safety clothing. It is also argued that the planted eucalyptus forest absorbs the noise of the industrial plant and thus protects the public from excessive noise. According to V&M do Brasil, all these protective measures are tested and monitored on a regular basis.¹⁷⁶ In contrast, the impact on flora and fauna is assessed as low, as the system is integrated into an old existing building of the V&M Steel plant. As an additional negative impact, V&M do Brasil describes the possibility of environmental pollution due to leakages at the storing sites of the stocked tar. But the company emphasizes its reliable sealing devices and its contingency plan. The pollution of waters is prevented by an appropriate treatment of the wastewater.¹⁷⁷

¹⁷⁵“Anexo III da Resolução N°1 da CIMGC – Projeto Barreiro,” [Appendix III of Resolution No. 1 of CIMGC - Barreiro Project] accessed April 6, 2014, http://www.mct.gov.br/upd_blob/0017/17922.pdf.

¹⁷⁶“V&M do Brasil-Letter of Approval,” Federative Republic of Brazil Interministerial Commission on Global Climate Change, 2005, 2.

¹⁷⁷Ibid.

According to V&M do Brasil, the CDM project is not a new source of emissions, because within the production process, the blast furnace gas is burned in the chimneys before it can escape into the atmosphere. Furthermore, the combustion of wood tar generates less than 7 percent of new emissions. Because the system already uses existing by-products or surpluses to generate electricity, it is not necessary to draw power from other sources. Consequently, the project uses two renewable fuels for the production of electricity.¹⁷⁸

Overall, the project activity has the potential to reduce the energy demand of the company. Therefore, the purchasing of electricity from the energy companies of Minas Gerais (Companhia Energética de Minas Gerais, CEMIG) will be reduced from 350,400 MWh per year to 258,000 MWh per year—a savings of 92,400 MWh per year. According to the reference scenario, without the project activity, both the blast furnace gas as well as the tar would be burned and the emission would be released into the atmosphere.

Finally, V&M do Brasil comes to the conclusion that the positive effects of the project would outweigh a negative impact (noise), and so the project activities are to be assessed positively in comparison to the reference scenario.¹⁷⁹

Concerning the project's contribution to job creation and the development of social working conditions, V&M do Brasil states that the company will be able to generate, in a first step, ten new jobs through the construction, use, and maintenance of the system. Furthermore, the company assumes that indirect jobs will be generated. The company claims to initiate investments for the education and health of the people with the help of control programs and donations. In addition to educational campaigns, V&M do Brasil supports numerous institutions such as a kindergarten, which serves about 70 children in the industrial area.¹⁸⁰ According to V&M do Brasil, the founding of the Committee for the Integration of the Community (Comitê de Integração com a

¹⁷⁸Ibid., 3.

¹⁷⁹“V&M do Brasil-Letter of Approval,” Federative Republic of Brazil Interministerial Commission on Global Climate Change, 2005, 6.

¹⁸⁰Ibid., 6.

Comunidade—CINCO) should help, “to prevent or minimize any potential negative effects on the operation of the company.”¹⁸¹ The responsibilities of the Committee include the creation of greater transparency of the company, the provision of assistance for the disadvantaged and the promotion of general social integration. V&M do Brasil also points to its product certification and environmental protection of about 206,000 m² of agricultural land that would be used for environmental education. In addition, the company is involved in numerous art and cultural projects. In relation to all activities described in the Appendix III, the company’s engagement lead to local job creation and the integration of the people neighboring communities of the project.¹⁸²

Regarding the third requirement of Appendix III, V&M do Brasil states that the creation of jobs and the implementation of social activities would improve local distribution of income. The participation and integration of different social classes would contribute significantly to this outcome.¹⁸³ At the national level, in reference to the Ministry of Mining and Energy, the use of renewable energy would also contribute to a better distribution of income.¹⁸⁴ The company emphasizes that its competitive force would rise through the CERs from the project, and therefore, it could contribute to a more sustainable and equitable society.

Concerning the contribution to training and technological development, the fourth requirement of Appendix III, V&M do Brasil emphasizes that it would be the first project in which both blast furnace gas and tar are used to generate energy.¹⁸⁵ Furthermore, the project would use technology that originates 100 percent in Brazil. Consequently, the project especially promotes the national industry. After describing the exact process technology for combustion of blast furnace gas and wood tar, it should be noted that no technical support or licenses from abroad are necessary for the project activity, as the

¹⁸¹Ibid., 7.

¹⁸²Wittger, “Der Clean Development Mechanism in Brasilien – Nachhaltigkeitsstandards in Theorie und Praxis,” 56.

¹⁸³“V&M do Brasil-Letter of Approval,” Federative Republic of Brazil Interministerial Commission on Global Climate Change, 2005, 9.

¹⁸⁴Wittger, “Clean Development Mechanism in Brasilien,” 56.

¹⁸⁵“V&M do Brasil-Letter of Approval,” 10.

process would be considered to be a Brazilian innovation. For the state of Minas Gerais, a further spread of this procedure is already underway.

As far as regional integration and the impact of the project to other sectors, which is the fifth requirement of Appendix III, V&M do Brasil notes the increasing problems of sufficient power supply in Brazil. In reference to the 2001 government's implementation of electricity rationing, the company emphasizes the need for alternative power generation for the future of Brazil.¹⁸⁶ With the help of the electrical self-sufficiency of the company, the energy otherwise taken from the local power grid for V&M do Brasil, could now be used for the energy supply of approximately 45,000 people. V&M do Brasil considers the integration of its own generation of energy within a steel company as an important integration of two different industrial sectors, as well as improving relations, dialogue, and cooperation between the two sectors. Like Plantar S.A., V&M do Brasil emphasizes the project's positive effects on the environment, workers, and the economy in great detail. In addition, the benefits and commitments to the region's population are particularly emphasized.

2. PPD Analysis

The assignment of each section in the PPD of V&M do Brasil differs from the PPD of Plantar S.A. in name only. In the case of V&M do Brasil, the environmental impact of the project is described in Section F (instead of E) and the stakeholder's involvement is discussed in Section G (rather than in Section E). According to the PDD, after a supposedly detailed examination and the preparation of a report on the environmental impact, a negative impact of the project on the environment is considered to be not relevant. Moreover, this document provides a summary of the effects and the countermeasures concerning the CDM project.¹⁸⁷

¹⁸⁶Ibid., 11.

¹⁸⁷ Wittger, "Der Clean Development Mechanism in Brasilien – Nachhaltigkeitsstandards in Theorie und Praxis," 57.

Overall, the description of stakeholder involvement in the PDD of the project of the V&M do Brasil is strikingly low. The content of Section G.1, which includes the description of the method concerning stakeholder involvement, is limited to the statement that all stakeholders were invited by mail or fax to submit comments regarding the project. Accordingly, in Section G.2, only brief remarks are made. This section merely points to the absence of stakeholder comments. Thus, as a consequence, Section G.3 shows no statements concerning the implementation or consideration of the comments received.¹⁸⁸

On the basis of the analyzed PDD, the CIMGC initiated the LoA. Accordingly, because the Brazilian DNA only evaluates validated PDDs, it has to be assumed that the DOE Det Norske Veritas checked the investigated PDD and approved it accordingly. As in the Plantar S.A. case, an examination of the validation report confirms this assumption. There is no objection concerning the stakeholder involvement or the sustainability benefits of the project.¹⁸⁹

The analysis of Appendix III, the PDD, and the validation report shows that V&M do Brasil as well as the DOE Det Norske Veritas assess that the project has especially positive effects. In contrast to the statements of Plantar S.A., at least possible adverse effects on the environment of the region are initially mentioned. The following section describes the contents of the corporate documents as well as the congruence with the requirements of CIMGC.

The analysis of the official documents shows that two very different descriptions of the project and reality exist. Consequently, in both projects serious doubts about the quality of the sustainability and quality of stakeholder involvement occur. In accordance with the requirements of the CIMGC in terms of contribution to local environmental sustainability, Plantar S.A. describes and evaluates the climate impact of the project in comparison to the estimated climate change mitigation effect of the reference scenario. It

¹⁸⁸“V&M do Brasil-Letter of Approval,” 35.

¹⁸⁹“Clean Development Mechanism Project Design Document Form (CDM-PDD),” UTE Barreiro S.A. Renewable Electricity Generation Project, Version 4 Prepared by EcoSecurities Ltd, August 2005, accessed March 6, 2014, http://www.mct.gov.br/upd_blob/0021/21393.pdf, 8.

is striking that although the existence of a monitoring plan is highlighted, its more accurate description, however, fails to appear. The same peculiarity is found in the sustainability criteria listed in Appendix III. These are also not explained in detail. In this way, the description of these parameters remains superficial and less than satisfactory. In contrast, Plantar S.A. assesses the requirements of Appendix III concerning the working conditions, quality of life, and regional development, as largely satisfactory. Overall, the company's commitment to its employees, the quality of working conditions, and the contribution of the project to regional development is presented in a strikingly positive manner.

The technological innovations are compared in sufficient detail to the reference scenario. However, it becomes clear that it is hardly possible for the layman to make a serious examination and evaluation of the descriptions of the implemented technology. In contrast to the claims of the CIMCG, the origin of the technology, its reproducibility, the existence of license fees, and the need for support by skilled personnel are not addressed. In the PDD, as already shown in Appendix III, the positive impacts of the project are repeated to a large extent, although this is not explicitly required. It seems as if the companies try, wherever possible, to emphasize the positive aspects of their projects. With regard to the stakeholder comments, a more detailed and substantive explanation is not provided. Consequently, it is not possible to extract important information from the PDD; instead, external documents have to be examined.

Similarly, V&M do Brasil is committed to a detailed description of the sustainability benefits of its project in Appendix III. Unlike Plantar S.A., V&M do Brasil attempts to use a different tactic. With the presentation of possible risks in Appendix III, the company tries to forestall possible critiques against the project. Wherever possible, in line with Plantar S.A., V&M do Brasil highlights its own commitment and the sustainability of its own project. In regards to the contribution to the local environmental sustainability, V&M do Brasil presents the climate impact of the project in comparison to the estimated impact on climate protection in the reference scenario.

Concerning the contribution to job creation and the development of social working conditions, the creation of a positive image is a major concern of the company. However, the company assumes the generation of indirect employment without providing further explanations about the numbers and causes. Regarding the contribution to income distribution, V&M do Brasil refers less specifically to the direct and indirect socio-economic effects for the population with low incomes. Moreover, the company describes the effects on jobs and the national economy in a rather general manner. For the layman, the explanation of the technological innovations lacks of traceability. In contrast to the descriptions of Plantar S.A., V&M do Brasil presents detailed information on the origin of the technology, its reproducibility, the existence of license fees, and the need for support by international experts.

With regard to the regional integration and the impact of the project on other sectors, V&M do Brasil only makes quite general remarks and rather represents the usefulness of the project for the Brazilian power supply. The comments on the environmental impacts of the project, which have already been made in Appendix III, are repeated in the PDD. Due to its brevity, the description of stakeholder involvement particularly is striking. With the respective issuing of a LoA, the CIMGC confirmed the positive contribution to sustainability of both CDM projects in Brazil. Considering only the documents examined here as a basis for decision, such an assessment is quite understandable. Furthermore, except for some very general formulations and less detailed representations, the companies are eager to portray only the positive effects of the projects on the region.

C. CONCLUSION

There has been strong criticism and public denunciation of the two projects, which is initially surprising since there are no negative comments from stakeholders in either the companies' PDD or in Appendix III regarding a lack of sustainability benefits.¹⁹⁰ This is especially remarkable in the case of Plantar S.A., as the stakeholder criticism was clearly put forward between the first phase of the stakeholder consultation in October 2001 and the second phase between November and December 2006 in at least four letters to the PCF. Therefore, the lack of consideration of the commentary by international stakeholders is surprising. At least the CIMGC should have noticed during a regular examination of the Plantar S.A. project that there is severe criticism of the sustainability benefits. The complete lack of negative criticism remains more than dubious. The same observation applies to V&M do Brasil. The lack of stakeholder criticism is again very surprising. The public criticism of the project, which was accessible on the Internet, took place on June 13, 2007—after the official phase of stakeholder participation. As mentioned earlier, international NGOs criticized the lack of participation concerning the formal stakeholder process. Therefore, a subsequent voicing of criticism remains unfortunately without consequences.

If the criticism of the stakeholders were actually true, it would be considered a subversion of the sustainability benefits through the CIMGC, the DOE, and the companies Plantar S.A. and V&M do Brasil. In such a manner and despite correct application, the Brazilian sustainability standards would lead to non-sustainable projects and would be worthless in their current form. In light of the criticisms, it seems essential to verify the provided information on site. It seems as if the CIMGC decided exclusively on the basis of the submitted documents.¹⁹¹ Furthermore, it is striking that a parliamentary commission of inquiry was able to find significant deficiencies in the quality of working conditions. This supports the critiques with particular importance and increases the doubts that the CIMGC lacks sufficiency of care. Therefore, a local review

¹⁹⁰Wittger, "Der Clean Development Mechanism in Brasilien – Nachhaltigkeitsstandards in Theorie und Praxis," 63.

¹⁹¹Ibid., 64.

of the information provided in Appendix III by the DNA is of crucial importance. Obviously, a pure self-assessment of the sustainability benefits by the companies cannot guarantee the sustainability of CDM projects. The precondition for a positive implementation is that the DNA pursues a serious interest in the sustainability of CDM projects and not economic interests.

In summary, there is reasonable doubt that the CDM is able to achieve its goal of sustainable development in Brazil. A crucial reason for this conclusion is the fundamental difficulty of finding a generally accepted definition of sustainability. A generally accepted and “ideal” evaluation of sustainability benefits is not possible until a uniform definition of sustainability and a consistent operationalization has been agreed to internationally.

V. GERMAN-BRAZILIAN COOPERATION

Brazil is the only country in Latin America that has a Strategic Partnership with Germany. In May 2008, Germany and Brazil signed an Action Plan for the Strategic Partnership, and subsequently, both countries agreed to expand the partnership in the bilateral and multilateral spheres.¹⁹²

The quality of different bilateral projects and the high number of actors involved in the German-Brazilian partnership show the importance of bilateral cooperation for both countries.¹⁹³ The engagement differs significantly in intensity and breadth from the commitment of the EU to Brazil. Compared to the Strategic Partnership between Brazil and the EU, the bilateral relations between Germany and Brazil are far more comprehensive and diverse.

Bilateral relations between Germany and Brazil have a long tradition, and the two states share more than 500 years of history, which began with German immigration to Brazil in the sixteenth century.¹⁹⁴ (The immigration connection continues to have a positive effect on German-Brazilian relations.) Since the 1960s, this alliance has experienced a substantial consolidation through the commitment of the German economy.¹⁹⁵ The mutual relations are widely anchored in the political, economic, cultural and social space. These relations are based on shared social values and a compatible view of a global, multi-polar order. The bilateral cooperation is structured comprehensively

¹⁹²“Aktionsplan der deutsch-brasilianischen strategischen Partnerschaft,” [Action Plan of the German-Brazilian Strategic Partnership] Brasilia, 2008, accessed March 14, 2014, http://www.brasil.diplo.de/contentblob/3022910/Daten/1605301/2008_strategische_partnerschaft_de.pdf, 1.

¹⁹³“Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen,” [Relations between Brazil and Germany—Political Relations] Auswärtiges Amt [Federal Foreign Office], accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

¹⁹⁴Boris Fausto, *A Concise History of Brazil* (New York: Cambridge University Press, 2006), 22.

¹⁹⁵Speech of German ambassador Wilfried Grolig from Brasilia during a panel discussion of the German Society for Foreign Policy, Forum Baden-Württemberg, and the Brazilian Honorary Consulate in Baden-Württemberg, Tuesday, October 22, 2013 in Stuttgart, http://www.brasil.diplo.de/Vertretung/brasilien/de/02_Brasilia/31.10.13_20Rede_20BO_20Stuttgart.html.

and covers such topics as international crisis management, economics, energy, climate and environment, defense, labor and social affairs, and human rights.

Taking advantage of budget funds from the Federal Ministry for Economic Cooperation (BMZ) and the International Climate Initiative (ICI), Germany and Brazil are working closely together concerning the protection of tropical forests, the promotion of renewable energy sources, and the advancement of energy efficiency.¹⁹⁶ Furthermore, the bilateral inter-governmental cooperation focuses particularly on the exchange of scientific-technological and cultural issues.¹⁹⁷ In addition, there are numerous contacts between the NGOs of both countries.

A. POLITICAL RELATIONS

Germany and Brazil maintain active personnel exchanges at the political level.¹⁹⁸ For instance, German Chancellor Angela Merkel visited the country in May 2008 and took the opportunity to sign the Action Plan of the Strategic Partnership and a bilateral energy agreement.¹⁹⁹ In early December 2009, Brazil's President Luiz Inácio Lula da Silva conducted a state visit to Germany. During this visit, numerous agreements were signed. In more detail, these agreements include the areas of legal assistance, social security, public safety, economic cooperation, the fight against climate change, as well as technology and innovation. Especially in the area of infrastructure and security, the major focus was on the three big upcoming events for Brazil: the Soccer World Cup in 2014, the XXXI Olympic Games, and the XV Paralympics in 2016. In March 2012, together

¹⁹⁶“Brasilien—Situation und Zusammenarbeit,” [Brazil—Situation and Cooperation] Bundesministerium für wirtschaftliche Zusammenarbeit [Federal Ministry for Economic Cooperation and Development], accessed March 14, 2014, http://www.bmz.de/de/was_wir_machen/laender_regionen/lateinamerika/brasilien/zusammenarbeit.html.

¹⁹⁷“Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen,” Auswärtiges Amt, accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

¹⁹⁸“Aktuelle Informationen zu den deutsch-brasilianischen bilateralen Beziehungen,” [Latest Information on the German-Brazilian Bilateral Relations] Vertretungen der Bundesrepublik Deutschland in Brasilien [Representations of the Federal Republic of Germany in Brazil], accessed April 22, 2014, http://www.brasil.diplo.de/Vertretung/brasilien/de/07_Aussenpolitik/Bilaterale_Beziehungen/Bilaterale_Beziehungen.html.

¹⁹⁹“Aktionsplan der deutsch-brasilianischen strategischen Partnerschaft,” Brasilia, 2008, accessed March 14, 2014, http://www.brasil.diplo.de/contentblob/3022910/Daten/1605301/2008_strategische_partnerschaft_de.pdf.

with Chancellor Merkel, President Dilma Rousseff opened the world's largest trade fair for information technology (Center for Office Automation, Information Technology and Telecommunications—CeBIT) in Hanover, with Brazil participating as the fair's partner country.²⁰⁰

The current German-Brazilian Year 2013/2014 aims to present both states as modern, cosmopolitan, and diverse nations. In May 2013, during his visit to Brazil, German President Joachim Gauck launched a series of events titled “Germany and Brazil—where ideas come together.”²⁰¹ At the political level of cooperation, numerous visits by federal ministers, parliamentarians, and state politicians contribute to the substantive dialogue within German-Brazilian relations.

In many issues on the international agenda, Brazil and Germany work closely together,²⁰² including on the reform of the United Nations, the expansion of the Security Council with new permanent and non-permanent members, and the reform of the global financial order. Cooperation in the international climate and environmental policy forms another touchstone of the German-Brazilian comity. In addition, within the G20 conferences, important issues are discussed concerning the financial, currency, and global economic policy.²⁰³

B. ECONOMIC RELATIONS

Brazil is Germany's most important trading partner in Latin America. Since 2009, the bilateral trade has grown following a temporary decline in the wake of the economic and monetary crisis. Over the last years, Germany's exports to Brazil were quite stable

²⁰⁰Denise Schmidt, “CeBit: Brasilien als Partnerland 2012,” [CeBit: Brazil as a Partner Country in 2012] BrasilNews, Besser International GmbH, accessed March 14, 2014, <http://www.brasilnews.de/cebit-brasilien-als-partnerland-2012-2012/>.

²⁰¹Claudio Struck, “Deutschland + Brasilien 2013–2014,” [Germany + Brazil 2013–2014] accessed April 22, 2014, <http://www.alemanha-brasil.org/br>.

²⁰²“Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen,” Auswärtiges Amt, accessed March 14, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²⁰³“GRUPPE DER ZWANZIG—Die G20,” [GROUP OF TWENTY—The G20] Die Bundesregierung [The Federal Government of Germany], Themen [Topics], G8/G20, accessed April 20, 2014, <http://www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/G8G20/G20-uebersicht.html;jsessionid=BDE1E0340ABA8FB4508C7C2CAC79E117.s3t2?nn=393164>.

and, in 2013, totaled approximately \$15.2 billion. This sum represents an increase of 0.4 percent over 2012.²⁰⁴ In comparison, in 2013, German imports from Brazil amounted to \$11.9 billion, a decline of nearly 13 percent. As an importer of German goods, in 2013, Brazil was ranked 20, and as exporter it was ranked 23.²⁰⁵ The main export goods of Brazil for the German market are iron ore, soybeans and soy products, coffee and coffee products, automobile parts, civilian aircraft, machinery, meat, copper, and crude oil. Brazil's imports from Germany are mainly machinery, automobiles and auto parts, chemical raw materials, and pharmaceutical products.

In 2012, Germany's direct investments amounted to \$2.03 billion. Including the reinvestments, the total stock of German direct investments came to more than \$27 billion.²⁰⁶ Brazilian direct investments in Germany have been negligible but are increasing. In Brazil, about 1,400 German-Brazilian companies employ more than 250,000 people. Moreover, with more than 1,200 German companies, São Paulo is one of the largest German business locations worldwide.²⁰⁷

In Brazil, the association of German Chambers of Commerce and Industry has established joint German-Brazilian Chambers of Commerce and Industry, which are based in São Paulo, Rio de Janeiro, and Porto Alegre. In addition, smaller organizations exist, inter alia, in Recife. Furthermore, a branch office of Germany Trade and Invest

²⁰⁴“Aus- und Einfuhr (Außenhandel): Deutschland, Jahre, Länder,” [Export and Import (Foreign Trade): Germany, Years, Countries] Statistisches Bundesamt, accessed March 14, 2014, https://www-genesis.destatis.de/genesis/online/data;jsessionid=8B69D5FEE080ECBE3385F70A9BA5A1B9.tomcat_GO_2_1?operation=abrufabelleBearbeiten&levelindex=2&levelid=1394842396604&auswahloperation=abrufabelleAuspraegungAuswaehlen&auswahlverzeichnis=ordnungsstruktur&auswahlziel=werteabruf&selektionname=51000-0003&auswahltext=%23SSTLAH-STLAH508%23Z-01.01.2013%2C01.01.2012&werteabruf=Werteabruf.

²⁰⁵“Außenhandel—Rangfolge der Handelspartner im Außenhandel der Bundesrepublik Deutschland,” [Foreign Trade—Ranking of Trading Partners in Foreign Trade of the Federal Republic of Germany] Statistisches Bundesamt, Wiesbaden 2014, accessed March 14, 2014, https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/Aussenhandel/Handelspartner/Tabelle/RangfolgeHandelspartner.pdf?__blob=publicationFile, 2.

²⁰⁶“Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen,” Auswärtiges Amt, accessed March 14, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²⁰⁷“Brasilien im Blickpunkt der Weltöffentlichkeit,” [Brazil in the Focus of the International Public] Deutsch-Brasilianische Industrie- und Handelskammer, accessed March 14, 2014, <http://www.ahkbrasilien.com.br/medien-business-center-2014/>.

(GTAI) is based in São Paulo. The common foreign Chambers of Commerce and Industry provide a wide range of information for German companies and investors. They offer administrative support and information concerning issues of foreign investment.²⁰⁸ In contrast, the representation of the EU in Brazil consists only of a delegation based in Brasilia.²⁰⁹

To improve and deepen these bilateral economic relations, German-Brazilian Economic Meetings are held on an annual basis.²¹⁰ Therefore, the Federation of German Industry (Bundesverband der Deutschen Industrie—BDI) and the Brazilian Industry Association (Associação Confederação Nacional da Indústria—CNI) are responsible for organizing such meetings. In addition, during this event, the German-Brazilian Joint Commission conducts its annual meeting on Economic Cooperation. From May 12 to 14, 2013, under the motto “German Brazilian cooperation to promote competitiveness,” the thirty-first German-Brazilian Economic Meetings took place in São Paulo. With more than 2,000 participants, this event noted a record number of visitors.²¹¹ The highlights of the event were the speeches by President Gauck and President Rousseff.

The next German-Brazilian Economic Meetings are scheduled for the period from August 1 to September 2, 2014 in Hamburg.²¹² The positive response to establishing fairs abroad, like the Sustainability Fair ECOGERMA 2012 in São Paulo, strengthens the efforts of the German-Brazilian Chamber of Commerce. In regard to innovative topics,

²⁰⁸“Einschätzung der Markteintrittsmöglichkeiten,” [Assessment of Market Entry Options], Deutsch-Brasilianische Industrie- und Handelskammer, accessed April 22, 2014, <http://www.ahkbrasilien.com.br/dienstleistungen/markteintritt/einschaetzung-der-markteintrittsmoeglichkeiten/>.

²⁰⁹“Delegation to Brazil,” European External Action Service, Delegation of the European Union to Brazil, accessed April 20, 2014, http://eeas.europa.eu/delegations/brazil/index_en.htm.

²¹⁰“Beziehungen zwischen Brasilien und Deutschland—Wirtschaftliche Beziehungen,” [Relations between Brazil and Germany—Economic Relations] Auswärtiges Amt, accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²¹¹“Deutsch-Brasilianischen Wirtschaftstage 2013,” [German-Brazilian Business Days 2013] Bundesverband der Deutschen Industrie e.V., accessed March 14, 2014, <http://www.bdi.eu/DBWT2013.htm>.

²¹²IP Desenvolvimento Empresarial, “32nd German Brazilian Economic Meeting, “ accessed April 22, 2014, http://www.misterwhite.com.br/ipdes_ingles/index.php/home-oficial/37-ingles/home4/152-german-brazilian-economic-meeting-2014.

such as urban development, climate change, improvement of environmentally friendly and energy-efficient technologies reflects the special German interest in Brazil.

C. CULTURAL AND EDUCATIONAL COOPERATION

The early settlements of German immigrants in the south (Blumenau, Joinville, and São Bento do Sul) and northeast (Recife, Fortaleza, and Belem) of the country are of particular importance for the cultural links between Germany and Brazil.²¹³ As German-Brazilian cultural societies, these old German roots make a valuable contribution to the cultural presence in Brazil. Starting in 1969, a cultural agreement was signed, and in 2005, a related supplementary convention on the status of cultural mediators completed the agreements.²¹⁴ The priorities in the cooperation are German language training for Brazilian citizens, cultural program work, as well as scientific and academic exchange. The prestige of German as a foreign language is relatively strong. German is seen as an important European cultural language and it is perceived as a key to professional and academic success. The number of students learning the German language has increased steadily in recent years.²¹⁵ Currently, there are six branches of the German Goethe Institute in Brazil (Brasília, Curitiba, Porto Alegre, Rio de Janeiro, Salvador-Bahia, and São Paulo). Alone in its branch in São Paulo, the Goethe Institute provides language training for more than 3,500 Brazilians.²¹⁶

²¹³Vladir Gregory, “Zur deutschen Einwanderung in Brasilien,” [German Immigration to Brazil] Edição Especial, Konrad-Adenauer-Stiftung XIV (2013), accessed April 22, 2014, <http://www.kas.de/wf/doc/10985-1442-1-30.pdf>, 115–118.

²¹⁴The language and cultural mediators support the linguistic and cultural communication between people with different cultural and language backgrounds, mostly in the strict sense between members of a minority or marginalized group, especially migrants, and representatives of prevailing in the country in the majority culture, such as employees in government agencies or in medical or social institutions.

²¹⁵Christoph Mücher, “Annual Press Conference—Press Portfolio 2012,” Goethe-Institut Headquarters, München, 2012, accessed March 16, 2014, http://www.goethe.de/prs/pro/pressemappe_jpk2012/pressemappe_jpk2012.pdf.

²¹⁶“50 Jahre Goethe-Institut São Paulo,” [50 Years of Goethe-Institut São Paulo] Goethe Institut São Paulo, accessed March 24, 2014, <http://www.goethe.de/ins/br/sap/uun/jub/de11712563.htm>.

Today, Brazil is an important partner of the German Academic Exchange Service (Deutscher Akademischer Austausch Dienst—DAAD) in Latin America.²¹⁷ This represents an important basis for the cooperation on the academic research level. In Brazil, the DAAD maintains partnerships at the federal and state level. Its focus is the realization of scientific double degrees and doctorate programs.²¹⁸ Among the most important exchange programs that the DAAD offers together with its Brazilian partners, is the scholarship program for Brazilian students. In 2012, more than 2,300 students and scientists have participated in DAAD scholarship programs between Brazil and Germany.²¹⁹

D. RESEARCH COOPERATION

Within the Latin American region, Brazil is Germany's most important partner in the field of research and science.²²⁰ Germany was able to expand its presence in Brazil with the implementation of a “German-Brazilian Year of Science, Technology and Innovation—2010/2011” and the establishment of the “German Science and Innovation House” in São Paulo.²²¹ Through this bilateral engagement in scientific collaboration, both countries established a closely intertwined innovation system. In addition, following the Year of Science 2010/2011, the “Year of Germany in Brazil 2013/2014” was implemented, which also includes an extensive scientific program. Germany's President Joachim Gauck opened the event in Rio de Janeiro in May 2013.

²¹⁷“Beziehungen zwischen Brasilien und Deutschland—Kulturelle und bildungspolitische Zusammenarbeit,” [Relations Between Brazil and Germany—Cultural and Educational Cooperation] Auswärtiges Amt, accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²¹⁸“Brasilien,” [Brazil] Deutscher Akademischer Austausch Dienst [German Academic Exchange Service], Länderinformation Brasilien [Country Information Brazil], accessed March 16, 2014, <https://www.daad.de/laenderinformationen/brasilien/de/>.

²¹⁹Ibid.

²²⁰“Beziehungen zwischen Brasilien und Deutschland—Forschungszusammenarbeit,” [Relations Between Brazil and Germany—Research Cooperation] Auswärtiges Amt, accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²²¹“Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011,” [The German-Brazilian Year of Science, Technology and Innovation 2010/2011], Bundesministerium für Wirtschaft und Forschung [Federal Ministry for Economic Affairs and Energy], accessed April 22, 2014, <http://www.dbwti.de>.

German-Brazilian scientific and technological cooperation has been active for more than 40 years. It is based on a bilateral framework agreement from 1969, which both governments renewed in 1996. The main areas of cooperation are the environment and sustainable development.²²²

Brazil has become a valued partner of the project-related scientific research collaboration. Currently, there are more than 400 university partnerships and bilateral cooperative arrangements between research institutions and academic institutions.²²³ In addition, renowned German research institutes are involved in Brazil. For example, particularly committed are the Helmholtz Research Foundation (Helmholtz Forschungsgemeinschaft–HGF), the German Research Foundation (Deutsche Forschungsgemeinschaft–DFG), the Fraunhofer-Gesellschaft (FhG), the Max Planck Society (Max-Planck-Gesellschaft–MPG), the Alexander von Humboldt Foundation (AvH), and the Leopoldina.

In September 2013, the bilateral Commission for Scientific and Technological Cooperation came together for its twenty-eighth meeting in Brasilia. As new priorities for research collaboration, the commission determined the areas of bio economy, biopharmaceuticals, and rare earth elements. At present, scientists of both countries are working on the following major research projects:

- DINARIO—Climate change, landscape dynamics, land use and natural resources in the Atlantic Forest of Rio de Janeiro²²⁴ (among others, the University of Applied Science Köln, the universities of Leipzig, Jena, and

²²²“Grundlagen und Schwerpunkte der deutsch-brasilianischen Kooperation,” [Principles and Priorities of the German-Brazilian Cooperation] Bundesministerium für Wirtschaft und Forschung, Internationales Büro, accessed April 22, 2014, <http://www.internationales-buero.de/de/1002.php>.

²²³“Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011—Wissenschaftslandschaft,” Bundesministerium für Wirtschaft und Forschung, accessed April 22, 2014, <http://www.dbwti.de>.

²²⁴“DINARIO—Climate Change, Landscape dynamics, Land use and Natural Resources in the Atlantic Forest of Rio de Janeiro,” Fachhochschule Köln [Cologne University of Applied Sciences], accessed April 20, 2014, <http://dinario.fh-koeln.de/index.html>.

Bonn, EMBRAPA²²⁵): integrated approaches concerning the conservation and sustainable use of Brazil's coastal rainforest

- BRAGECRIM—Brazilian-German Collaborative Research Initiative on Manufacturing Technology²²⁶ (among others, DFG): cooperation of 30 scientific institutions from both countries to build a framework program to fund and support collaborative projects between German and Brazilian research groups in the field of advanced manufacturing technologies
- ATTO—Amazonian Tall Tower Observatory²²⁷ (among others, MPI for chemistry Mainz): construction of a 320-meter-high climate tower and observatory in the Amazon region to study the air-conditioning function of the rainforest
- BRAMAR²²⁸ (among others, the University of Göttingen and the RWTH Aachen): implementation of strategies and technologies to reduce water scarcity in semi-arid northeastern part of Brazil
- CarBioCial—Carbon-optimized land management strategies for southern Amazonia²²⁹ (among others, the universities of Göttingen, Hannover, Hamburg, Kassel, Freiberg, Berlin, Kiel, Hohenheim, and Leipzig): the project is investigating viable carbon-optimized land management strategies to maintain ecosystem services under changing climate conditions
- INNOVATE—Interplay among multiple uses of water reservoirs via innovative coupling of aquatic and terrestrial ecosystems²³⁰ (among others, the University of Technology Berlin, the Leibniz-Institute for

²²⁵The Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA) (Brazilian Enterprise for Agricultural Research) is a state-owned company affiliated with the Brazilian Ministry of Agriculture, which is devoted to pure and applied research on agriculture. EMBRAPA conducts agricultural research on many topics including animal agriculture and crops. For example, one National Research Center, The National Goat Research Center (CNPQ) is located in Sobral, Ceará (northeastern Brazil) and conducts research on small ruminants, primarily goats and hair sheep.

²²⁶“BRAGECRIM Brief Description,” Rheinisch-Westfälische Technische Hochschule Aachen [RWTH Aachen University], accessed April 20, 2014, <http://www.bragecrim.rwth-aachen.de/index.php/home-news>.

²²⁷“ATTO,” Max Planck Institute for Chemistry, accessed April 20, 2014, <http://www.mpic.de/en/research/projects/atto.html>.

²²⁸“Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen,” Auswärtiges Amt, accessed March 14, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²²⁹“CarBioCial - Carbon-optimized Land Management Strategies for Southern Amazonia,” Universität Göttingen [University of Göttingen], accessed April 20, 2014, <http://www.uni-goettingen.de/de/211024.html>.

²³⁰“INNOVATE - Interplay Among Multiple Uses of Water Reservoirs via Innovative Coupling of Aquatic and Terrestrial Ecosystems,” Technische Universität Berlin [Technical University of Berlin], accessed April 20, 2014, <http://www.innovate.tu-berlin.de>.

Fishing Berlin, the Potsdam Institute für Climate Research, the University of Hohenheim, and the University of Applied Science Dresden): improvements of agricultural yields, reduction of greenhouse gases, and protecting biodiversity with the help of optimized multiple uses of water reservoirs for power generation and irrigation

- INTECRAL—Integrated Eco Technologies and Services for a Sustainable Rural Rio de Janeiro²³¹ (among others, the University of Applied Science Köln, the Friedrich-Schiller-University of Jena, and the University of Leipzig): the project aims to provide solutions in the service and technology sectors with the objective of sustainable development in the fields of environment and economy in the state of Rio de Janeiro
- IEPALT—Integration of spent pot liners originating from primary aluminum production into the aluminum recycling technology²³² (among others, the University of Technology Clausthal): development of a method for residue-free recycling of the complete electrolysis cells outbreak (coal and fireclay) from the melt flow reactors the primary aluminum industry

Other cooperative projects exist in the fields of marine, aerospace, and agricultural research. The Jülich Research Center and the Brazilian Institution for Agricultural Research (EMBRAPA) have established, each in the respective host country, external branch offices (“external laboratories”). The aim of the establishment of external institutions is to represent the entire agricultural research in the partnering country and intensify the bilateral cooperation.

E. COOPERATION FOR SUSTAINABLE DEVELOPMENT

The German projects are fully in line with the defined objectives of the sustainable development of the EU.²³³ At the European level, there are no specific projects of cooperation in the area of sustainable development. Rather, in accordance

²³¹“INTECRAL—Integrated Eco Technologies and Services for a Sustainable Rural Rio de Janeiro,” Fachhochschule Köln, accessed April 20, 2014, <http://www.tt.fh-koeln.de/research/projects/researchprojectsintecral/>.

²³²“Integration of Spent Pot Liners Originating from Primary Aluminum Production into the Aluminum Recycling Technology, IEPALT,” Technische Universität Clausthal [Technical University of Clausthal], Institute of Mineral and Waste Processing, Waste Disposal and Geomechanics, Department of Mineral and Waste Processing, accessed April 20, 2014, <http://www.ifa.tu-clausthal.de/en/lehrstuehle/lehrstuhl-fuer-rohstoffaufbereitung-und-recycling/forschung/aktuelle-projekte/iepalt/>.

²³³European Commission, “Communication from the Commission A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission’s proposal to the Gothenburg European Council),” COM/2001/0264 final, accessed March 16, 2014, http://europa.eu/legislation_summaries/environment/sustainable_development/128117_de.htm.

with the principle of subsidiarity, the individual European member states fill the cooperation with Brazil with life.

Cooperation for sustainable development between Germany and Brazil focuses on joint initiatives for confronting global problems.²³⁴ A particular focus is the fight against climate change and the protection of biodiversity. The partnership is aimed at the protection and sustainable use of tropical forests and the promotion of renewable energy and energy efficiency. Currently, numerous specialized German companies are active in the area of renewable energy and energy efficiency.²³⁵ Consequently, important synergies have already been established between the fields of research, technology, and business. The German cooperation with Brazil is organized and carried out with the help of the Society for International Cooperation (Gesellschaft für Internationale Zusammenarbeit—GIZ), the KfW Development Bank and the German Investment and Development Company (Deutsche Investitions- und Entwicklungsgesellschaft mbH—DEG).

Since 2008, in addition to the Federal Ministry for Economic Cooperation, the Federal Environment Ministry (BMU) has been active within the framework of the International Climate Initiative in cooperation with Brazil.²³⁶ Research-based innovations play an important role. To realize the full potential of this arrangement, it is necessary to intensify and systematize the cooperation of science and research with the political, business, and civil society. To achieve this goal, the German-Brazilian partnership is testing new approaches.²³⁷ In the center of the new approaches are the features of “innovation” and “sustainability.” Therefore, Germany and Brazil have defined four

²³⁴“Beziehungen zwischen Brasilien und Deutschland—Zusammenarbeit für nachhaltige Entwicklung,” [Relations between Brazil and Germany—Cooperation for Sustainable Development] Auswärtiges Amt, accessed April 22, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²³⁵Ibid.

²³⁶“Brasilien—Situation und Zusammenarbeit,” Bundesministerium für wirtschaftliche Zusammenarbeit, accessed April 22, 2014, http://www.bmz.de/de/was_wir_machen/laender_regionen/lateinamerika/brasilien/zusammenarbeit.html.

²³⁷“Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011—Wissenschaftskooperation,” Bundesministerium für Wirtschaft und Forschung, accessed April 22, 2014, <http://www.dbwti.de>.

priorities: the promotion of cutting-edge research, the optimization of sustainability in the use of resources, the creation of innovative industrial production processes, and the commitment to inspire an enthusiasm in young people for the field of science.

The Brazilian government is making significant investments to expand sustainable development. Thus, numerous government programs have been launched, such as the “Action Plan for the Prevention and Control of Deforestation of the Amazon,” the “National Plan for the Promotion of Value Chains of Social and Biological Diversity,” as well as the social programs “My House, My Life,” “Electricity for All,” and the program “Science without Borders.”²³⁸ In addition, as Germany has extensive experience in the design and implementation of sustainable development policies, it is qualified to support the Brazilian approaches. The German efforts are recognized in many areas of environmental technology as examples of innovation and global leadership. More than 750 publicly funded university and non-university research institutions, as well as a variety of research centers of German companies, are the engine of technological development and other innovations.²³⁹ A special feature of the German research landscape is the close connection between research and application.

German-Brazilian cooperation for sustainable development has set itself the goal of making this experience available for the diverse Brazilian research and support programs. As part of the German-Brazilian Year of Science, Technology and Innovation 2010/2011, the Federal Ministry for Economic Cooperation and Development and the Brazilian Ministry of Foreign Affairs have started the cooperation projects “NoPa—Novas Parcerias” (New Partnerships).²⁴⁰ The aim of the project is to promote research-based innovations with highlighted priorities of the German-Brazilian cooperation for sustainable development, in particular the issues of “Renewable Energy and Energy

²³⁸“Brazil Scientific Mobility Program,” Institute of International Education, accessed April 22, 2014, <http://www.iie.org/Programs/Brazil-Scientific-Mobility/About>.

²³⁹“Beziehungen zwischen Brasilien und Deutschland— Zusammenarbeit für nachhaltige Entwicklung “ Auswärtiges Amt, accessed March 17, 2014, http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.

²⁴⁰“Programa NoPa – Novas Parcerias CAPES/DAAD/GIZ,” [NoPa Program - New Partnerships CAPES/DAAD/GTZ] Coordenação de Comunicação Social (CCS/Capes) [Coordination of Social Communication (CCS / CAPES)], accessed March 15, 2014, <http://www.capes.gov.br/cooperacao-internacional/alemanha/nopa>.

Efficiency” and “Conservation and Sustainable Use of Tropical Forests.” To achieve the objectives, the instruments and the networks of Technical Cooperation, as well as the Scientific and Technological Cooperation are the basis of concrete German-Brazilian research projects, which will be directly linked to each other. Already at the stage of the design process of the research funding and scholarship programs, the Brazilian economy and the government expressed their demand for research results in the field of sustainable development.²⁴¹ In addition, even during the research phase, the intensive dialogue between “producers” and potential “consumers” of research results in business and politics is further promoted. Thus, from an early stage, the future users of the results have the chance to shape the direction of research, and thereby, contribute to the precision fit of usability for innovation.

The expectations of the mutual relations between Brazil and Germany are high on both sides and are observed with interest in an international context. The interests pursued by Germany are in line with the EU objectives encompassing its relationship with Brazil. Due to the principle of subsidiarity, which is an important part of relations between the EU and its member states, specific projects are realized only between the member states and Brazil. Subsequently, this raises the question to what extent the EU is in a position to monitor the bilateral relations of its member states and to check whether the strategic objectives of the EU Strategic Partnership are met. Furthermore, a special monitoring procedure is not provided in the documentation for the Strategic Partnership between the EU and Brazil. In addition, there is reason to believe that another primary interest of the EU is the cooperation with MERCOSUR. This specific issue offers the opportunity for further investigation. A similar concern exists on the Brazilian side: Brazil would like to conclude a free trade agreement with the EU to further expand the mutual economic relations.

German-Brazilian economic relations are characterized by an extensive implementation of specific projects in the political, economic, cultural, and social space.

²⁴¹“Entwicklungszusammenarbeit—NoPa und iNoPa,” [Development Cooperation—NoPa and iNoPa] Deutscher Akademischer Austausch Dienst, accessed April 22, 2014, <https://www.daad.de/entwicklung/hochschulen/zusammenarbeit/17068.de.html>.

In practice, however, several weaknesses in the implementation of such projects arise. For example, it is evident from several reports of the German business press that German companies face significant problems in the establishment of economic cooperation or in the establishment of companies in Brazil.²⁴² Consequently, there is room for improvement on both sides of the Atlantic. Above all, even politics must facilitate mutual access to markets and the implementation of a business-friendly atmosphere.

In the area of research and educational cooperation, however, there are fewer problems, due largely to the commitment of individual academic institutions. Furthermore, in this area of cooperation, the realization of economic gains is not the first priority. However, sustainable development in this area depends mainly on advertising campaigns that illustrate the importance of cooperation.

The long-standing relations between Germany and Brazil are numerous and strong. But it can also be noted that an intensification of the bilateral partnership is especially related to the establishment of the right policy environment. The gap between the objectives of the cooperation and the practical implementation needs to be reduced even further in order to lead to satisfactory results for all sides.

²⁴²Walter and Caulyt, "Brasilien dringt auf EU-Freihandelsabkommen."

VI. CONCLUSION

The preceding pages examine the effects of the anti-deforestation programs on Brazil's economic sustainability goals and the related effects on the objectives for sustainable development of the Strategic Partnership between Brazil and the EU. Specifically, they assess whether the effects of the Kyoto Protocol's Clean Development Mechanism, as implemented in Brazil in order to achieve a reduction in greenhouse gases, run counter to the development and sustainability objectives of the Strategic Partnership with the EU and might, in fact, slow progress on the reduction of poverty.

The correlation between climate and economic policy objectives of the Strategic Partnership and the practical impact was illustrated with the CDM projects of Plantar S.A. and V&M do Brasil. In this context, a special feature highlights the area of sustainable development. Moreover, a closer examination of these two specific CDM projects in Brazil has shown that the perception of the sustainability benefits of CDM projects is mainly influenced by subjective perceptions of all interested parties. Thus, it can be stated that the contribution of CDM projects to sustainable development in Brazil remains doubtful. In contrast, there is no doubt that the investments related to the CDM projects have a direct impact on their region of the country.

In addition to the interventions in nature, reasonably positive effects on the regional and local economy arise. Indeed, regional and local companies are considered in the placing of subcontracts and local businesses are integrated into the support chain of the CDM project company. Subsequently, the investor also desires these positive effects, because these issues can be represented advantageously in the outline of the approval documents.²⁴³ In addition, whether this will also contribute to a long-term and thus sustainably effective contribution to the development of Brazil must be questioned. On the one hand, these doubts are directly related to the lack of a generally recognized definition of sustainability. Therefore, CDM projects can only be measured and compared in terms of sustainable development. Consequently, there is a general problem

²⁴³Wittger, "Der Clean Development Mechanism in Brasilien – Nachhaltigkeitsstandards in Theorie und Praxis," 65–66.

in the operationalization of CDM projects in terms of sustainable development goals. In other words: without a common definition, it is not possible to perform corresponding operationalization. As long as no single definition of sustainability exists or all parties do not accept such a definition, CDM projects can only conditionally be compared with each other.

The examination of the two projects of Plantar S.A. and V&M do Brasil has also shown that already in the approval process no uniform assessment criteria were applied. Subsequently, it seems, the descriptions of the projects of the companies were adapted so that the national licensing authority would more easily agree to an allocation of the concession. Secondly, the reasons for doubt on the sustainability benefits are linked to the absence of monitoring functions of the CDM process. Neither from the part of the Brazilian government, nor from the strategic partnership with the EU, are any procedures for monitoring of CDM projects foreseen. Thus, a credible implementation of sustainable development is in question as a basic control mechanism is missing, and its implementation is also obviously not designated. Therefore, a formal and transparent verification of the impact of CDM projects in the field could help here. With an appropriate monitoring plan, the contribution of CDM projects to sustainable development could be reviewed with little effort.

Based on the present analysis, it appears that the CDM projects do not have positive effects on sustainable development. In light of the objectives of the Strategic Partnership between Brazil and the EU, to achieve climate protection goals, the overall framework of CDM projects allows a lot of leeway for planning and implementation for the companies. Unfortunately, an independent scientific evaluation of the projects is not implemented. Thus, the possibility exists that the companies describe the projects with exclusively advantageous attributes to come as smoothly as possible through the national approval procedures. This kind of behavior seems to be particularly evident in the project records of the companies Plantar S.A. and V&M do Brasil, in which the individual projects and their impact on the environment, the regional economy, and the social

sectors are described very positively.²⁴⁴ In the positive description of the intended effects of the projects all of these impacts are shown, but the evidence of the contribution to sustainable development in the region cannot be provided. Although this is indeed acknowledged by the companies, but not solely due to the lack of generally accepted definition of sustainability and the non-existent monitoring of the projects, this argument cannot be independently verified prior to granting approval. In particular, the absence of a monitoring function in the Strategic Partnership contributes to the fact that an appropriate review of the sustainability benefits of CDM projects cannot be furnished. In addition, a subsidiary relocation of these functions to the level of the EU member states is not mentioned in the documents of the Strategic Partnership.

This procedure for approval and implementation of CDM projects can be related to economic aspects of the Strategic Partnership between the EU and Brazil. Consequently, the realization of investments, at least in the short term, is coupled with an inflow of capital into the region. Also from a short-term view, beneficial effects on the regional actors in the economic cycle are also possible. An objective assessment of the long-term effects cannot be made, especially concerning the behavior of the company subsequent to the return on investment.

Moreover, a closer examination of the contents of the Strategic Partnership between the EU and Brazil reveals that the general formulation of common goals was deliberately chosen. On the part of the EU member states, the Strategic Partnership is thus only a general framework for the more specific aspect of bilateral partnerships. This circumstance can be observed in the example considering the bilateral cooperation between Germany and Brazil. While on the EU level, no specific projects of cooperation with Brazil are in place, Germany and Brazil signed a number of collaboration documents. These German-Brazilian cooperative arrangements include all subject areas contained in the Strategic Partnership. The framework that the EU provides to its member

²⁴⁴“Anexo III da Resolução Nº 1 da Comissão Interministerial de Mudança Global do Clima. Contribuição do Projeto de Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar, Fevereiro 2007,” accessed March 1, 2014, http://www.mct.gov.br/upd_blob/0019/19345.pdf; “V&M do Brasil-Letter of Approval,” Federative Republic of Brazil Interministerial Commission on Global Climate Change, 2005.

states is almost completely utilized by the bilateral relations. The positive effects for Brazil and Germany characterize the effective cooperation. Sustained efforts are required on both sides to maintain the high level of consistency.

From an environmental perspective, the strength of the economic objectives of the Strategic Partnership provides another starting point for criticism of the sustainable development. Due to the frequent mention of economic relations with Latin America, especially in the form of MERCOSUR, one cannot resist the impression that the Strategic Partnership between the EU and Brazil aims to get Europe closer to the business and commerce of MERCOSUR, and therefore, secure a share in the economic growth in Latin America. Furthermore, one may conclude that the environmental technical cooperation with Brazil is intended solely as a lever for economic access to MERCOSUR. Consequently, the seriousness on the EU side in the cooperation with Brazil must be questioned critically. Is the commitment to climate protection possibly only a cloak covering a desire for more intensive cooperation in the economic sphere?

In particular, the regional and local effects in regard to economic inequalities, the fight against poverty, and air pollution tend to be negative. It must also be determined whether the objectives of environmental protection and economy do not adversely affect each other especially in the longer term. If there are gaps between the objectives, a common and simultaneous achievement of defined objectives cannot be realized. This area offers opportunities for further studies that focus on an assessment of competing or complementary goals of the Strategic Partnership.

In summary, it can be stated that sustainable development objectives, as formulated in the Strategic Partnership between the EU and Brazil, are intended through CDM projects, but the fulfillment of these objectives cannot be verified. In order for them to be verifiable, the Strategic Partnership between the EU and Brazil must be fine-tuned to fit the distinctive priorities and negotiating postures of the two partners. This observation implies that the EU's other strategic partnerships also fall short concerning sustainable development. Therefore, a comparison between the different Strategic Partnerships may offer additional space for further investigation.

BIBLIOGRAPHY

Primary Sources

- Auswärtiges Amt [Federal Foreign Office]. *Brasilien Wirtschaftspolitik*. [Brazil Economic Policy] Berlin: 2009.
- . “Beziehungen zwischen Brasilien und Deutschland—Politische Beziehungen.” [Relations between Brazil and Germany—Political Relations]. Accessed March 14, 2014. http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.
- . “Beziehungen zwischen Brasilien und Deutschland—Wirtschaftliche Beziehungen.” [Relations between Brazil and Germany—Economic Relations]. Accessed April 22, 2014. http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.
- . “Beziehungen zwischen Brasilien und Deutschland—Kulturelle und bildungspolitische Zusammenarbeit.” [Relations between Brazil and Germany—Cultural and Educational Cooperation]. Accessed April 22, 2014. http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.
- . “Beziehungen zwischen Brasilien und Deutschland—Forschungszusammenarbeit.” [Relations between Brazil and Germany—Research Cooperation]. Accessed April 22, 2014. http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.
- . “Beziehungen zwischen Brasilien und Deutschland—Zusammenarbeit für nachhaltige Entwicklung.” [Relations between Brazil and Germany—Cooperation for Sustainable Development]. Accessed April 22, 2014. http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Brasilien/Bilateral_node.html#doc335300bodyText1.
- . “Aktionsplan der deutsch-brasilianischen strategischen Partnerschaft.” [Action Plan of the German-Brazilian Strategic Partnership]. Brasilia (2008). Accessed March 14, 2014. http://www.brasil.diplo.de/contentblob/3022910/Daten/1605301/2008_strategische_partnerschaft_de.pdf.

- . Speech of German ambassador Wilfried Grolig from Brasilia during a panel discussion of the German Society for Foreign Policy. Forum Baden-Württemberg, and the Brazilian Honorary Consulate in Baden-Württemberg. October 22, 2013 in Stuttgart.
http://www.brasil.diplo.de/Vertretung/brasilien/de/02_Brasilia/31.10.13_20Rede_20BO_20Stuttgart.html.
- Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit [Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety]. Internationale Klimapolitik. [International Climate Policy]. Accessed November 21, 2013. www.bmu.de/P201/.
- Bundesministerium für Wirtschaft und Forschung [Federal Ministry for Economic Affairs and Energy]. “Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011.” [The German-Brazilian Year of Science, Technology and Innovation 2010/2011]. Accessed April 22, 2014. <http://www.dbwti.de>.
- . “Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011—Wissenschaftslandschaft.” [The German-Brazilian Year of Science, Technology and Innovation 2010/2011—Science Landscape]. Accessed April 22, 2014. <http://www.dbwti.de>.
- . “Das Deutsch-Brasilianische Jahr der Wissenschaft, Technologie und Innovation 2010/2011—Wissenschaftskooperation.” [The German-Brazilian Year of Science, Technology and Innovation 2010/2011—Science Cooperation]. Accessed April 22, 2014. <http://www.dbwti.de>.
- . “Grundlagen und Schwerpunkte der deutsch-brasilianischen Kooperation.” [Principles and priorities of the German-Brazilian Cooperation]. Internationales Büro. Accessed April 22, 2014. <http://www.internationales-buero.de/de/1002.php>.
- Bundesministerium für wirtschaftliche Zusammenarbeit [Federal Ministry for Economic Cooperation and Development]. “Brasilien—Situation und Zusammenarbeit.” [Brazil—Situation and Cooperation]. Accessed March 14, 2014. http://www.bmz.de/de/was_wir_machen/laender_regionen/lateinamerika/brasilien/zusammenarbeit.html.
- CIMGC. “Portataria Nº 533, de 29 de agosto de 2000.” [Law No. 533 of August 29, 2000]. Regimento Interno Comissão Interministerial de Mudança global do clima, Brasília, 2000.
- . “Resolução Nº1, de 11 de setembro de 2003.” [Resolution No. 1 of September 11, 2003]. Brasília, 2003.
- . “Resolução Nº3, de 24 de março de 2006.” [Resolution No. 3 of March 24, 2006] Brasília, 2006.

- . “Resolução N°7, de 5 de março de 2008.” [Resolution No. 7, of March 5, 2008]. Brasília, 2008.
- . “Projetos submetidos à Comissão Interministerial no âmbito do Mecanismo de Desenvolvimento Limpo.” [Projects Submitted to the Interministerial Commission under the Clean Development Mechanism]. Brasília, 2009.
- . “Status atual das actividades de projeto no âmbito do Mecanismo de Desenvolvimento Limpo (MDL) no Brasil e no mundo.” [Current Status of Project Activities under the Clean Development Mechanism (CDM) in Brazil and in the World]. Brasília, 2009.
- Commission of the European Communities. “Communication from the Commission to the European Parliament and the Council: Towards an EU-Brazil Strategic Partnership.” KOM (2007) 281. Brussels, 2007.
- . “The European Community and Brazil.” Europe Information—External Relations. X-218-80-EN, Brussels, 1980.
- The Congress of the United States. Congressional Budget Office. *Deforestation and Greenhouse Gases*. 2012.
- Council of the European Union. “European Union-Brazil Strategic Partnership Joint Action Plan.” 15084/11. Brussels, October 4, 2011.
- Designated National Authority. “Interministerial Commission on Global Climate Change.” Ministério da Ciência, Tecnologia e Inovação. Accessed April 20, 2014. <http://www.mct.gov.br/index.php/content/view/14666.html>.
- Die Bundesregierung [The Federal Government of Germany]. “Gruppe der Zwanzig—Die G20.” [Group of Twenty—The G20]. Themen [Topics]. G8/G20. Accessed April 20, 2014. <http://www.bundesregierung.de/Content/DE/StatistischeSeiten/Breg/G8G20/G20-uebersicht.html;jsessionid=BDE1E0340ABA8FB4508C7C2CAC79E117.s3t2?nn=393164>.
- Deutscher Akademischer Austausch Dienst [German Academic Exchange Service]. “Brasilien.” [Brazil]. Länderinformation Brasilien [Country Information Brazil]. Accessed March 16, 2014. <https://www.daad.de/laenderinformationen/brasilien/de/>.
- . “Entwicklungszusammenarbeit—NoPa und iNoPa.” [Development Cooperation—NoPa and iNoPa]. Accessed April 22, 2014. <https://www.daad.de/entwicklung/hochschulen/zusammenarbeit/17068.de.html>.

- Enquete-Kommission [Enquete Commission]. Abschlußbericht der Enquete-Kommission. "Schutz des Menschen und der Umweltziele und Rahmenbedingungen einer nachhaltig zukunftsverträglichen Entwicklung." [Final Report of the Enquete Commission. "Protection of Human Beings, Environmental Objectives, and the Framework of a Sustainable Future-Compatible Development]. Konzept Nachhaltigkeit [Concept of Sustainability]. Vom Leitbild zur Umsetzung [From Vision to Implementation]. 13. Deutscher Bundestag [13th German Bundestag]. Bonn, 1998.
- Europäische Kommission [European Commission]. *Brasilien: Länderstrategiepapier 2007–2013* [Brazil: Country Strategy Paper 2007–2013]. Brussels, 2007.
- European Commission. "EU emissions trading system (EU ETS)." Accessed November 30, 2013. http://ec.europa.eu/clima/policies/ets/index_en.htm.
- . "Communication from the Commission: A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's Proposal to the Gothenburg European Council)." COM/2001/0264 final. Accessed March 16, 2014. http://europa.eu/legislation_summaries/environment/sustainable_development/128117_de.htm.
- European Court of Auditors. "Special Report No. 6/2006 Concerning the Environmental Aspects of the Commission's Development Cooperation, Together with the Commission's Replies." Court of Auditors, Official Journal of the European Union C 235/1. Luxembourg: 2006.
- European Commission. "Trade with Brazil." Directorate-General for Trade. November 2013.
- . "Brazil-Country Strategy Paper 2007–2013." (E/2007/889). 2007.
- . "Ratification of the Second Commitment Period of the Kyoto Protocol to the United Nations Framework Convention on Climate Change." COM(2013) 768 final. Brussels, 2013. Accessed March 25, 2014. http://ec.europa.eu/clima/policies/international/negotiations/docs/com_2013_768_en.pdf.
- . "Trading with Mercosur." Accessed March 25, 2014. <http://ec.europa.eu/trade/policy/countries-and-regions/regions/mercosur/>.
- European Union. *Treaty of the European Union* (consolidated version). Official Journal of the European Union C 115/13. May 9, 2008.
- . "Joint Communiqué of the MERCOSUR-European Union Ministerial Meeting, Santiago/Chile 2013." Trade Policy. Accessed March 25, 2014. http://trade.ec.europa.eu/doclib/docs/2013/january/tradoc_150458.pdf.

- European Union External Action Service. “Report on the Implementation of the European Security Strategy, Providing Security in a Changing World.” Brussels, December 11, 2008.
- . “European Security Strategy.” European Union External Action Service. Brussels. Accessed April 20, 2014. <http://www.eeas.europa.eu/csdp/about-csdp/european-security-strategy/>.
- . “Delegation to Brazil.” Delegation of the European Union to Brazil. Accessed April 20, 2014. http://eeas.europa.eu/delegations/brazil/index_en.htm.
- Eurostat. “Top Ten Countries as Extra EU-27 Partners for FDI Positions, EU-27, End 2009–2011.” European Commission. Accessed February 18, 2014. [http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Top_ten_countries_as_extra_EU-27_partners_for_FDI_positions,_EU-27,_end_2009-2011_\(EUR_1_000_million\).png&filetimestamp=20130722084750](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Top_ten_countries_as_extra_EU-27_partners_for_FDI_positions,_EU-27,_end_2009-2011_(EUR_1_000_million).png&filetimestamp=20130722084750).
- Government of Brazil. Interministerial Committee on Climate Change. Decree No. 6263 of November 21, 2007. *Executive Summary – National Plan on Climate Change*. Brasília, 2008.
- . “Programa NoPa – Novas Parcerias CAPES/DAAD/GIZ.” [NoPa Program - New Partnerships CAPES / DAAD / GTZ]. Coordenação de Comunicação Social (CCS/Capes) [Coordination of Social Communication (CCS / CAPES)]. Accessed March 15, 2014. <http://www.capes.gov.br/cooperacao-internacional/alemanha/nopa>.
- . “Clean Development Mechanism Project Design Document Form (CDM-PDD).” UTE Barreiro S.A. Renewable Electricity Generation Project. Version 4. Prepared by EcoSecurities, Ltd. August 2005. Accessed March 6, 2014. http://www.mct.gov.br/upd_blob/0021/21393.pdf.
- . “V&M do Brasil-Letter of Approval.” 2005.
- . “Plantar Letter of Approval (2007).” Accessed November 17, 2013. http://cdm.unfccc.int/filestorage/7/Z/9/7Z9KY7XL0W444I7UFGJM8WLI030D1B/LOA%20Brazil.pdf?t=cVZ8bXdtZXNnfDCjamdLwEEi9GwXA_rd4S7e.
- . “Anexo III da Resolução Nº1 da CIMGC – Projeto Barreiro.” [Appendix III of Resolution No. 1 of CIMGC - Barreiro Project]. Accessed April 6, 2014. http://www.mct.gov.br/upd_blob/0017/17922.pdf.

- . “Anexo III da Resolução Nº 1 da Comissão Interministerial de Mudança Global do Clima. Contribuição do Projeto de Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar, Fevereiro 2007.” [Appendix III of Resolution No. 1 of the Interministerial Commission on Global Climate Change. Contribution of the Project Mitigation of Methane Emissions in the Charcoal Production of Plantar, February 2007]. Accessed March 1, 2014. http://www.mct.gov.br/upd_blob/0019/19345.pdf.
- . “Mitigação de Emissões de Metano na Produção de Carvão Vegetal da Plantar.” [Mitigation of Methane Emissions in the Charcoal Production of Plantar]. Accessed March 17, 2014. <http://mct.gov.br/index.php/content/view/58160.html>.
- . “Portataria Nº 533, de 29 de agosto de 2000.” [Law No. 533 of August 29, 2000]. Regimento Interno Comissão Interministerial de Mudança global do Clima [Internal Regiment Interministerial Commission on Global Climate Change]. Accessed March 2, 2014. http://www.mct.gov.br/upd_blob/0001/1545.pdf.
- Ministry of Science and Technology. General Coordination on Global Climate Change. Brazil’s Initial National Communication to the United Nations Framework Convention on Climate Change. Brasilia, 2004.
- . *Second National Communication of Brazil to the United Nations Framework Convention on Climate Change*. Brasilia, 2010.
- . CDM Project Activities. Accessed November 30, 2013. http://www.mct.gov.br/index.php/content/view/43004/CDM_Project_Activities_received_by_the_Executive_Secretariat_of_the_Interministerial_Commission.html
- Rat der Europäischen Union [Council of the European Union]. “Ein sicheres Europa in einer besseren Welt—EUROPÄISCHE SICHERHEITSSTRATEGIE.” [A Secure Europe in a Better World—European Security Strategy]. Brussels, 2003. Accessed March 25, 2014. <http://consilium.europa.eu/uedocs/cmsUpload/031208ESSIIDE.pdf>.
- Statistisches Bundesamt [Federal Statistical Office]. “Außenhandel—Rangfolge der Handelspartner im Außenhandel der Bundesrepublik Deutschland.” [Foreign Trade—Ranking of Trading Partners in Foreign Trade of the Federal Republic of Germany]. Wiesbaden (2014). Accessed March 14, 2014. https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/Aussenhandel/Handelspartner/Tabellen/RangfolgeHandelspartner.pdf?__blob=publicationFile.

- . “Aus- und Einfuhr (Außenhandel): Deutschland, Jahre, Länder.” [Export and Import (Foreign Trade): Germany, Years, Countries]. Accessed March 14, 2014. https://www-genesis.destatis.de/genesis/online/data;jsessionid=8B69D5FEE080ECBE3385F70A9BA5A1B9.tomcat_GO_2_1?operation=abruftabelleBearbeiten&levelindex=2&levelid=1394842396604&auswahloperation=abruftabelleAuspraegungAuswaehlen&auswahlverzeichnis=ordnungsstruktur&auswahlziel=werteabruf&selectionname=51000-0003&auswahltext=%23SSTLAH-STLAH508%23Z-01.01.2013%2C01.01.2012&werteabruf=Werteabruf.
- United Nations Industrial Development Organization. *Clean Development Mechanism (CDM): Investor Guide GLO/99/H06 Brazil*. Vienna, 2003.
- . “CDM Project Portfolio for Brazil,” UN Interagency PROJECT GLO/99/H06 (Brazil). 2003. Accessed March 3, 2014. http://www.unido.org/fileadmin/import/12897_Brazil_portfolio_UNIDO.pdf.
- United Nations. *Economics of Climate Change in Latin America and the Caribbean Summary 2010*. Santiago de Chile, 2010.
- . *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 1998.
- United Nations Framework Convention on Climate Change. *Handbook*. Bonn, 2006.
- . “Kyoto Protocol Base Year Data.” Accessed November 22, 2013. http://unfccc.int/ghg_data/kp_data_unfccc/base_year_data/items/4354.php.
- . “The Buses of Brazil: Connectivity - Intelligent Transport Solution.” Accessed December 1, 2013. http://unfccc.int/secretariat/momentum_for_change/items/6639.php.
- . “Decisions of the Bali Climate Change Conference - December 2007.” Accessed December 1, 2013. http://unfccc.int/meetings/bali_dec_2007/meeting/6319/php/view/decisions.php.
- . “N2O Emission Reduction in nitric acid plant Paulínia, SP, Brazil.” Accessed November 30, 2013. <http://cdm.unfccc.int/Projects/DB/DNV-CUK1174479298.53/>.

- . “Validation Report: Mitigation of Methane Emissions in the Charcoal Productions of Plantar in Brazil.” Report No. 2007–0196. Accessed March 1, 2014.
<http://cdm.unfccc.int/filestorage/E/Z/G/EZG7AT3C7CHD70USTN3L11WK05JNQC/ValRep.pdf?t=VWp8bjFzODVyfDD7hGdZ-To9TunfAsmOHIBr>.
- . CDM – Executive Board Project Design Document Form for Afforestation and Reforestation Project Activities (CDM-AR-PDD)—Version 04, accessed April 6, 2014. http://www.netinform.net/KE/files/pdf/PDD_AR_Plantar.pdf.
- . “Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03.1.” Accessed March 1, 2014.
http://www.mct.gov.br/upd_blob/0022/22065.pdf.
- . “Project: 1051 Mitigation of Methane Emissions in the Charcoal Production of Plantar, Brazil – History.” Project Cycle Search. Accessed March 24, 2014.
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1175235824.92/history>.
- United States Department of Agriculture. Agricultural Research Service. “What Is Pyrolysis?” Accessed January 22, 2014.
<http://www.ars.usda.gov/Main/docs.htm?docid=19898>.
- Vertretungen der Bundesrepublik Deutschland in Brasilien [Representations of the Federal Republic of Germany in Brazil]. “Aktuelle Informationen zu den deutsch-brasilianischen bilateralen Beziehungen.” [Latest Information on the German-Brazilian Bilateral Relations]. Accessed April 22, 2014.
http://www.brasil.diplo.de/Vertretung/brasilien/de/07_Aussenpolitik/Bilaterale_Beziehungen/Bilaterale_Beziehungen.html.

Secondary Sources

- Aires, Keila. *Cost-benefit Analysis of Two Models of Agroforestry Systems in Rondônia, Brazil*. Durham: Duke University, Nicholas School of the Environment and Earth Sciences, 2007.
- Altwater, Elmar and Achim Brunnengräber. “Ablasshandel gegen Klimawandel? Marktbasierte Instrumente in der globalen Klimapolitik und ihre Alternativen.” [Selling of Indulgences Against Climate Change? Market-based Instruments in Global Climate Policy and its Alternatives]. Hamburg: VSA-Verlag [VSA-Publishers], 2008.
- Andersen, Lykke E., Clive W. J. Granger, Eustaquio J. Reis, Diana Weinhold, and Sven Wunder. *Dynamics of Deforestation and Economic Growth in the Brazilian Amazon*. Cambridge: Cambridge University Press, 2002.

- Americano, Branca. “CDM in Brazil: Towards Structural Change for Sustainable Development in Some Sectors.” In *A Reformed CDM – Including New Mechanisms for Sustainable Development*, edited by Karen Holm Olsen and Jørgen Fenhann, 23–35. Copenhagen: UNEP Risø Centre, 2008.
- Arens, Christof, and Wolfgang Sterk. “Die projektbasierten Mechanismen CDM&JI: Einführung und praktische Beispiele.” [The Project-based Mechanisms CDM & JI: Introduction and Practical Examples]. Berlin: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 2008.
- Boyle, Alan. *Human Rights and the Environment: A Reassessment*. London: Essex Court Chambers, 2010.
- Brown, Katrina, W. Neil Adger, Emily Boyd, Esteve Corbera-Elizalde, and Simon Shackley. “How Do CDM Projects Contribute to Sustainable Development?” Tyndall Centre Technical Report No. 16. Tyndall Centre for Climate Change Research, 2004.
- Bureau Veritas Certification. Report No: BRAZIL—val/BR1119369/2012 rev. 04.0. Validation Report V&M do Brasil S.A.. Neuilly Sur Seine Cdx. France, 2011.
- Bundesverband der Deutschen Industrie e.V. [Federation of German Industries]. “Deutsch-Brasilianischen Wirtschaftstage 2013.” [German-Brazilian Business Days 2013]. Accessed March 20, 2014. <http://www.bdi.eu/DBWT2013.htm>.
- Bussolo, Maurizio, Jann Lay, and Dominique van der Mensbrugghe. “Structural Change and Poverty Reduction in Brazil: The Impact of the Doha Round.” World Bank Policy Research Working Paper 3833, 2006.
- CDM Policy Dialogue. *Climate Change, Carbon Markets and the CDM: A call to action - Report of the High-Level Panel on the CDM Policy Dialogue* (2012). Accessed February 16, 2014. <http://www.cdmpolicydialogue.org/report/rpt110912.pdf>.
- Centro Clima [Climate Center]. “Proposta Revisada de critérios e indicadores de elegibilidade para avaliação de projetos candidatos ao Mecanismo de Desenvolvimento Limpo (MDL).” [Revised Proposal of Criteria and Indicators for Assessing the Eligibility of Potential Projects for the Clean Development Mechanism (CDM)]. Rio de Janeiro: Centro de Estudos Integrados sobre Meio Ambiente e Mudanças Climáticas [Center for Integrated Studies on Environment and Climate Change]. Accessed February 27, 2014. <http://www.centroclima.coppe.ufri.br/index.html>.
- Cosbey, Aaron, Jo-Ellen Parry, Jodi Browne, Yuvaraj Dinesh Babu, Preety Bhandari, John Drexhage, and Deborah Murphy. “Realizing the Development Dividend: Making the CDM Work for Developing Countries.” Phase 1 Report – Prepublication Version. International Institute for Sustainable Development (IISD), 2005.

- Denman, Kenneth L., and Guy Brasseur. "Couplings Between Changes in the Climate System and Biogeochemistry." The Intergovernmental Panel on Climate Change. Accessed November 23, 2013. http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch7.html.
- Deutsch-Brasilianische Industrie- und Handelskammer [German-Brazilian Chamber of Commerce and Industry]. "Brasilien im Blickpunkt der Weltöffentlichkeit." [Brazil in the Focus of the International Public]. Accessed March 14, 2014. <http://www.ahkbrasilien.com.br/medien-business-center-2014/>.
- . "Einschätzung der Markteintrittsmöglichkeiten." [Assessment of Market Entry Options] Accessed April 22, 2014. <http://www.ahkbrasilien.com.br/dienstleistungen/markteintritt/einschaetzung-der-markteintrittsmoeglichkeiten/>.
- Dow Jones TradeNews Emissions. "KfW kauft bis zu 2,4 Mio CERs aus Brasilien an." [KfW Buys up to 2.4 million CERs from Brazil]. Accessed December 1, 2013. http://klimabonus.com/article160_12066.html.
- Dröge, Susanne. *International Climate Policy: Priorities of Key Negotiating Parties*. Translated by Deborah Anne Bowen. Berlin: Stiftung Wissenschaft und Politik [German Institute for International and Security Affairs], 2010.
- . "The International Climate Policy Negotiations: Objectives, Themes, and Prospects for Success." In *International Climate Policy Priorities of Key Negotiating Parties*. Edited by Susanne Dröge. Berlin: German Institute for International and Security Affairs [German Institute for International and Security Affairs], 2010, 11–29.
- Egenhofer, Christian, and Monica Alessi. "EU Policy on Climate Change Mitigation since Copenhagen and the Economic Crisis." CEPS Working Document No. 380. CEPS. Brussels, March 2013.
- Eitze, Jasper. "Die EU und Brasilien–Partner für Klimaschutz und Energiesicherheit." [The EU and Brazil–Partners for Climate Protection and Energy Security]. Konrad-Adenauer-Stiftung. 2010.
- Ellis, Jane, Jan Corfee-Morlot, and Harold Winkler. "Taking Stock of Progress under the Clean Development Mechanism (CDM)." Organization for Economic Co-operation and Development (OECD). Paris, 2004.
- Emerson, Michael and Renato Flores, eds. *Enhancing the Brazil-EU Strategic Partnership—from the Bilateral to the Regional and Global*. Brussels: CEPS, 2010.

- Fachhochschule Köln [Cologne University of Applied Sciences]. “DINARIO—Climate Change, Landscape Dynamics, Land Use and Natural Resources in the Atlantic Forest of Rio de Janeiro.” Accessed April 20, 2014. <http://dinario.fh-koeln.de/index.html>.
- . “INTECRAL—Integrated Eco Technologies and Services for a Sustainable Rural Rio de Janeiro.” Accessed April 20, 2014. <http://www.tt.fh-koeln.de/research/projects/researchprojectsintecral/>.
- Fausto, Boris. *A Concise History of Brazil*. New York: Cambridge University Press, 2006.
- Fenhann, Jørgen, and Miriam Hinostroza. “CDM Information and Guidebook.” UNEP Risø Centre on Energy. Climate and Sustainable Development, Roskilde: 2012.
- Fishlow, Albert. *Starting Over: Brazil Since 1985*. Washington, DC: The Brookings Institution, 2011.
- Flores, Renato, Detlef Nolte, Lucio Renno, Christina Stolte, and Peer Thiery. “Sustainable Governance in the BRICS—Country Report Brazil.” Sustainable Governance Indicators. Bielefeld: Bertelsmann Stiftung, 2011.
- Friberg, Lars. “Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged.” *The Journal of Environment Development* 18, no. 4 (2009).
- Fronzizi, Isaura. *Guide to the Clean Development Mechanism*. Translated by Knight Campbell. Rio de Janeiro: Imperial Novo Milênio, 2009.
- Germany Trade and Invest. “CDM Markt kompakt.” [CDM Market Compact]. Cologne, 2009.
- de Gouvello, Christophe. “Brazil Low-carbon Country Case Study.” World Bank. Energy Sector Management Assistance Program. Washington, DC, 2010.
- Grabendorff, Wolf. “Brazil—A ‘Secure’ Partner for the European Union?” Noref Guest Writer Articles. Norwegian Peacebuilding Resource Centre, October, 2009.
- Gratius, Susanne. “Brazil and the EU: Between Balancing and Bandwagoning.” ESPO Working Paper No. 2. European Strategic Partnerships Observatory. FRIDE and the Egmont Institute, Madrid and Brussels, 2012.

- . “Brasilien und die EU: Wachsende Distanz trotz Wertegemeinschaft,” [Brazil and the EU: Growing Distance Despite being a Community of Values.] *Die EU im Beziehungsgefüge großer Staaten: komplex – kooperativ – krisenhaft* [The EU in the relational structure of large states: complex - cooperative - critical], edited by Kai-Olaf Lang and Gudrun Wacker, SWP-Studie, Stiftung Wissenschaft und Politik Deutsches Institut für Internationale Politik und Sicherheit [SWP-Study, German Institute for International and Security Affairs], Berlin, 2013.
- Gratius, Susanne, and Debora González. “The EU and Brazil: Shared Goals, Different Strategies.” In *Hot Issues, Cold Shoulders, Lukewarm Partners: EU Strategic Partnerships and Climate Change*, edited by Giovanni Grevi and Thomas Renard. Madrid: FRIDE, 2012.
- Gratius, Susanne and Detlef Nolte. “Die EU und Lateinamerika: Partnerschaft auf Augenhöhe?” [The EU and Latin America: Partnership at Eye Level?] German Institut of Global and Area Studies. GIGA Focus No. 2. Hamburg: 2013.
- Gregory, Vladir. “Zur deutschen Einwanderung in Brasilien.” [German Immigration to Brazil]. Edição Especial [Special Edition]. Konrad-Adenauer-Stiftung [Konrad-Adenauer-Foundation] XIV (2013). Accessed April 22, 2014.
<http://www.kas.de/wf/doc/10985-1442-1-30.pdf>.
- Grevi, Giovanni. “The EU and Brazil: Partnering in an Uncertain World?” CEPS working document. Centre for European Policy Studies No. 382. Brussels, May 2013.
- . “The Rise of Strategic Partnerships: Between Interdependence and Power Politics.” Edited by Giovanni Grevi and Álvaro de Vasconcelos. Chaillot Paper no. 109. European Union Institute for Security Studies. Paris: 2008.
- Goethe Institut São Paulo. “50 Jahre Goethe-Institut São Paulo.” [50 Years of Goethe-Institut São Paulo]. Accessed March 24, 2014.
<http://www.goethe.de/ins/br/sap/uun/jub/de11712563.htm>.
- Gößmann, David Michael, and Yesko Quiroga. *Clima, energía y crecimiento en Brasil: en búsqueda de una convivencia pacífica* [Climate, energy and growth in Brazil: in search of a peaceful coexistence]. Quito: FES, 2012.
- GTZ. “CDM/JI Initiative Country Study—Brazil: A CDM Market Overview.” Eschborn: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH [German Agency for Technical Cooperation], 2008.
- Heimbach, Margot, and Farina Busch. “Strategische Partnerschaften der Europäischen Union.” [Strategic Partnerships of the European Union.] Deutscher Bundestag [German Bundestag]. Wissenschaftliche Dienste [Science Services]. Fachbereich WD 11 – Europa [Department WD 11 – Europe]. Nr. 11/09. 29 July 2009.

- Heinrich Böll Foundation. “Inside a Champion—An Analysis of the Brazilian Development Model.” Publication Series on Democracy. Edited by Dawid Danilo Bartelt. Berlin, 2012.
- Hermanns, Klaus. “Brasilien auf der Gewinnerseite des Klimawandels?” [Brazil on the Winning Side of Climate Change?] *Fokus Brasilien* 6 (2007).
- Herold, Anke. “Berücksichtigung von Treibhausgasemissionen und –festlegungen durch Landnutzungsmaßnahmen (LULUCF) im Post-Kyoto-Regime – quantitative Analyse zur Einbeziehung von reduzierter Entwaldung in ein künftiges Klimaregime.” [Consideration of Greenhouse Gas Emissions and Repairs by Land Use Activities (LULUCF) in the post-Kyoto Regime—Quantitative Analysis for the Inclusion of Reduced Deforestation in a Future Climate Regime.] Berlin: Öko-Institut [Institute for Applied Ecology], 2008.
- Institute of International Education. “Brazil Scientific Mobility Program.” Accessed April 22, 2014. <http://www.iie.org/Programs/Brazil-Scientific-Mobility/About>.
- International Institute for Sustainable Development. “Brazil Case Study—Analysis of National Strategies for Sustainable Development.” Ottawa, 2004.
- IP Desenvolvimento Empresarial [IP Business Development]. “32nd German Brazilian Economic Meeting.” Accessed April 22, 2014. http://www.misterwhite.com.br/ipdes_ingles/index.php/home-oficial/37-ingles/home4/152-german-brazilian-economic-meeting-2014.
- Kill, Jutta. “Erstes Projekt im Clean Development Mechanismus des Kyoto-Protokolls eine Eukalyptusplantage? Beitrag zum Klimaschutz fragwürdig.” [First Project of the Clean Development Mechanism of the Kyoto Protocol a Eucalyptus Plantation? Contribution to Climate Protection Questionable.] Rundbrief III/2002: Das war der Gipfel. Forum Umwelt & Entwicklung [Newsletter III/2002: That was the Summit. Forum on Environment & Development]. Accessed October 27, 2013. <http://www.forumue.de/publikationen/rundbriefe/admin-rundbrief/rundbrief-iii2002-das-war-der-gipfel/?L=1%5C%5C%5C%5C%5C%5C%5C%27>.
- Konrad-Adenauer-Stiftung [Konrad-Adenauer-Foundation]. “Die EU und Brasilien—Partner für Klimaschutz und Energiesicherheit.” [The EU and Brazil—Partners for Climate Protection and Energy Security.] Accessed February 13, 2014. <http://www.kas.de/brasilien/de/publications/19835/>.
- Kreibich, Nicolas and Heiko Fechtner. “Potentiale ausgeschöpft und Hürden überwunden? CDM und JI in der ersten Kyoto-Verpflichtungsperiode.” [Potentials Exploited and Obstacles Overcome? CDM and JI in the First Kyoto Commitment Period.] Wuppertal Institut für Klima, Umwelt, Energie GmbH [Wuppertal Institute for Climate, Environment and Energy], May 2013.

- Lazarou, Elena. "The Sixth EU-Brazil Summit: Business beyond the Usual?" ESPO Policy Brief No. 8. European Strategic Partnerships Observatory. FRIDE and the Egmont Institute, Madrid and Brussels, 2013.
- Lazarowicz, Mark. *Global Carbon Trading: A Framework for Reducing Emissions*. Norwich: TSO, 2010.
- Maihold, Günther. "Strategische Partnerschaft und schwacher Interregionalismus: Die Beziehungen zwischen Brasilien und der EU." [Strategic Partnership and Weak Interregionalism: The Relations between Brazil and the EU.] in *Globale Außenpolitik der Europäischen Union. Interregionale Beziehungen und "strategische Partnerschaften"* [Global Foreign Policy of the European Union. Interregional Relations and "Strategic Partnerships"], edited by Annegret Bendiek and Heinz Kramer. Baden-Baden: Nomos, 2009.
- Margulis, Sergio. *Causes of Deforestation of the Brazilian Amazon*. World Bank Working Paper No. 22. Washington, DC, 2003.
- Max Planck Institute for Chemistry. "ATTO." Accessed April 20, 2014.
<http://www.mpic.de/en/research/projects/atto.html>.
- May, Peter H., Emily Boyd, Manyu Chang, and Fernando Veiga. "Local Sustainable Development Effects of Forest Carbon Projects in Brazil and Bolivia. A View from the Field." Center for International Forestry Research. Accessed March 1, 2014. http://www.cifor.org/publications/corporate/cd-roms/bonn-proc/pdfs/papers/T6_FINAL_May.pdf.
- MERCOSUR. "Quienes Somos." [Who We Are.] Accessed April 21, 2014.
http://www.mercosur.int/t_generic.jsp?contentid=3862&site=1&channel=secretaria&seccion=3.
- Michaelowa, Axel and Daisuke Hayashi. *Efficient DNA Operation: Lessons from Different DNA Settings in non-Annex-B Countries*. HWWI Research Paper 4–10, Hamburg: Hamburgisches WeltWirtschaftsinstitut [Hamburg Institute of International Economics], 2007.
- Mirkes, Dietmar. "Ökologischer Fußabtritt statt nachhaltiger Entwicklung." [Ecological Footprint Instead of Sustainable Development.] In *CDM-Brennpunkt* (2011), Luxembourg: Action Solidarité Tiers Monde (ASTM) [Third World Solidarity Action], 13.
- Moreno, Camila. "Green Economy and Development(alism) in Brazil—Resources, Climate and Energy Politics." In *Inside a Champion Analysis of the Brazilian Development Model*, edited by Dawid Danilo Bartelt, 45–59. Rio de Janeiro: Heinrich Böll Foundation, 2012.

- Mücher, Christoph. "Annual Press Conference—Press Portfolio 2012." München: Goethe-Institut Headquarters (2012). Accessed March 16, 2014.
http://www.goethe.de/prs/pro/pressemappe_jpk2012/pressemappe_jpk2012.pdf.
- Nohlen, Dieter. *Lexikon Dritte Welt: Länder, Organisationen, Theorien, Begriffe, Personen*. [Encyclopedia of the Third World Countries: Organizations, Theories, Concepts, Persons.] Hamburg: Rowohlt Taschenbuch Verlag GmbH, 2002.
- Olsen, Karen Holm. "The Clean Development Mechanisms Contribution to Sustainable Development: A Review of the Literature." *Climate Change* 84, no. 10 (2007): 59–73.
- Page, Joseph A. *The Brazillians*. Boston: Da Capo Press, 1995.
- Pearson, Ben. "The Clean Development Mechanism and Sustainable Development." Tiempo Climate Newswatch 2005. Accessed November 17, 2013.
<http://www.tiempocyberclimate.org/newswatch/comment050301.htm>.
- Perera, Luiz Carlos Jacob, Roberto Borges Kerr, Herbert Kimura, and Fabiano Guasti Lima. "Investing in Clean Development Mechanism (CDM) Projects in Brazil." *Journal of Operations and Supply Chain Management* 3, no.1 (2010): 1–14.
- Persson, Martin, and Christian Azar. "Brazil Beyond Kyoto: Prospects and Problems in Handling Tropical Deforestation in a Second Commitment Period." Naturvårdsverket, 2004.
- Plantar S.A.. "Validation Report: Mitigation of Methane Emissions in the Charcoal Productions of Plantar in Brazil. Report No. 2007–0196." Accessed November 25, 2013. <http://cdm.unfccc.int/UserManagement/FileStorage/EZG7AT3C7CHD70USTN3L11WK05JNQC>.
- Renard, Thomas. "The EU Strategic Partnerships Review: Ten Guiding Principles." ESPO. Policy Brief 2. Egmont: FRIDE, 2012.
- Renard, Thomas and Giovanni Grevi. "Hot Issues, Cold Shoulders, Lukewarm Partners: EU Strategic Partnerships and Climate Change." European Strategic Partnerships Observatory (ESPO). Madrid: FRIDE, 2012.
- Renner, Sebastian, and Jann Lay. "Brasilien und Mexiko: Entwicklung auf Kosten des Klimawandels?" [Brazil and Mexico: Development at the Cost of Climate Change?] *GIGA focus* no. 6 (2012), GIGA German Institute of Global and Area Studies.
- Rheinisch-Westfälische Technische Hochschule Aachen [RWTH Aachen University]. "BRAGECRIM Brief Description." Accessed April 20, 2014.
<http://www.bragecrim.rwth-aachen.de/index.php/home-news>.

- Schmidt, Denise. "CeBit: Brasilien als Partnerland 2012." [CeBit: Brazil as a Partner Country in 2012.] BrasilNews. Besser International GmbH. Accessed March 14, 2014. <http://www.brasilnews.de/cebit-brasilien-als-partnerland-2012-2012/>.
- Schmitt, Tobias. "Saubere Entwicklung für den Süden? Der Clean Development Mechanism und seine regionalen Auswirkungen: Am Beispiel von Eukalyptusplantagen in Curvelo, Südost-Brasilien." [Clean Development for the South? The Clean Development Mechanism and its Regional Implications: the Example of Eucalyptus Plantations in Curvelo, Southeast Brazil.] in *Wirtschafts- und sozialräumliche Strukturwandlungen und Interessenskonflikte in Lateinamerika* [Economic and socio-spatial structure changes and conflicts of interest in Latin America], edited by G. Kohlhepp, Tübingen: Geographisches Institut der Universität [University of Tübingen—Department of Geography], 2005.
- Sopher, Peter, and Anthony Mansell. "Brazil—The World's Carbon Market: A Case Study Guide to Emissions Trading." Environmental Defense Fund (EDF) and International Emissions Trading Association (IETA). Washington, DC, 2013, 1–8.
- Stratos Inc. Strategies to Sustainability. *Brazil Case Study: Analysis of National Strategies for Sustainable Development*. Ottawa, 2004. Accessed November 2, 2013. <http://www.iisd.org/measure/capacity/sdsip.asp>.
- Struck, Claudio. "Deutschland + Brasilien 2013–2014." [Germany + Brazil 2013–2014.] Accessed April 22, 2014. <http://www.alemanha-brasil.org/br>.
- Sutter, Christoph, and Juan Carlos Parreño. "Does the Current Clean Development Mechanism (CDM) Deliver Its Sustainable Development Claim? An Analysis of Officially Registered CDM Projects." *Climatic Change* 84, no. 1 (2007).
- de la Torre, Augusto, Pablo Fajnzylber, and John Nash. "Low Carbon, High Growth: Latin American Responses to Climate Change." World Bank Latin American and Caribbean Studies. Washington, DC: The World Bank, 2009.
- Tvevad, Jesper. "Lateinamerika." [Latin America.] European Parliament. 2012.
- Technische Universität Berlin [Technical University of Berlin]. "INNOVATE–Interplay Among Multiple Uses of Water Reservoirs via Innovative Coupling of Aquatic and Terrestrial Ecosystems." Accessed April 20, 2014. <http://www.innovate.tu-berlin.de>.

- Technische Universität Clausthal [Technical University of Clausthal]. “Integration of Spent Pot Liners Originating from Primary Aluminum Production into the Aluminum Recycling Technology, IEPALT.” Institute of Mineral and Waste Processing, Waste Disposal and Geomechanics, Department of Mineral and Waste Processing. Accessed April 20, 2014. <http://www.ifa.tu-clausthal.de/en/lehrstuehle/lehrstuhl-fuer-rohstoffaufbereitung-und-recycling/forschung/aktuelle-projekte/iepalt/>.
- Universität Göttingen [University of Göttingen]. “Carbiocial–Carbon-optimized Land Management Strategies for Southern Amazonia.” Accessed April 20, 2014. <http://www.uni-goettingen.de/de/211024.html>.
- UTE Barreiro S.A. “Clean Development Mechanism Project Design Document Form (CDM-PDD).” Renewable Electricity Generation Project, Version 4. Prepared by EcoSecurities Ltd., August 2005. Accessed March 6, 2014. http://www.mct.gov.br/upd_blob/0021/21393.pdf.
- Valladão, Alfredo. “Brazil: A ‘Strategic Partner’ for the EU?” *An International Actor and Partner for the EU?* Edited by Susanne Gratius. IBSA: Madrid: Fundación para las Relaciones Internacionales y el Diálogo Exterior (FRIDE) (Working Paper 63), July 2008.
- V&M do Brasil. “Validation Report: UTE Barreiro S.A. Renewable Electricity Generation Project–Brazil, Report No. 2005–0025.” Accessed November 25, 2013. http://cdm.unfccc.int/filestorage/X/C/P/XCPVJLVEQ80TCV21RH9FD6E6844K0U/Validation%20Report.pdf?t=bEJ8bXd1ajhrfDBrrhtLRBP28vcq_PyKFmYq.
- Viola, Eduardo. “Brazilian Climate Policy since 2005: Continuity, Change and Prospective.” CEPS Working Document No. 373. Brussels: CEPS, February 2013.
- Volpi, Giulio. *Human Development Report 2007/2008 Climate Mitigation, Deforestation and Human Development in Brazil*. New York: United Nations Development Programme—Human Development Report Office, 2007.
- Walter, Jan D., and Fernando Caulyt. “Brasilien dringt auf EU-Freihandelsabkommen.” [Brazil Pushes for an EU Free Trade Agreement.] Deutsche Welle [German Wave]. Accessed February 14, 2014. <http://dw.de/p/19UHy>.
- WCED. *Our Common Future*. The World Commission on Environment and Development. New York: Oxford University Press, 1987.
- Wilkinson, John, and Selena Herrera. “Biofuels, Climate Change and Sustainability in Brazil.” BRAZIL Instituto Interamericano de Cooperación para la Agricultura, 2010.

- Wittger, Bea. “Der Clean Development Mechanism in Brasilien– Nachhaltigkeitsstandards in Theorie und Praxis.” [The Clean Development Mechanism in Brazil–Sustainability Standards in Theory and Practice.] Wuppertal Institut für Klima, Umwelt und Klima GmbH [Wuppertal Institute for Climate, Environment and Energy], 2010.
- World Resource Institute. “WRI’s Climate Analysis Indicators Tool (CAIT 2.0).” Accessed April 20, 2014.
[http://cait2.wri.org/wri/Country%20GHG%20Emissions?indicator\[\]=Total%20GHG%20Emissions%20Excluding%20LUCF&indicator\[\]=Total%20GHG%20Emissions%20Including%20LUCF&year\[\]=2010&chartType=geo](http://cait2.wri.org/wri/Country%20GHG%20Emissions?indicator[]=Total%20GHG%20Emissions%20Excluding%20LUCF&indicator[]=Total%20GHG%20Emissions%20Including%20LUCF&year[]=2010&chartType=geo).
- World Bank. *Partnership for Market Readiness: Expression of Interest*. Brazil, 2011.
- . Projects and Operations. CDM Project Count. Accessed November 16, 2013.
<http://www.worldbank.org/projects/search?lang=en&searchTerm=CDM>.
- . “GDP (current US\$).” Accessed November 24, 2013.
<http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/1W?display=default>.
- Zilla, Claudia. “Brazil and Climate Policy: A Creative Partner with High Potential.” In *International Climate Policy Priorities of Key Negotiating Parties*, edited by Susanne Dröge (Berlin: German Institute for International and Security Affairs, 2010).

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California